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No. 10.

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SUPPLEMENT NUMBER 23 ON WAR MEDICINE AND SURGERY: Amoebiasis.

LOW BACK PAIN.¹

By JAMES H. YOUNG, M.D. (Adelaide), M.R.A.C.P.,
*Acting Honorary Physician to Out-patients, Perth Hospital ;
Assistant Physician, Children's Hospital, Perth.*

I THINK you will agree with me that low back pain is one of the most common conditions from which mankind suffers, and one of which we as a profession know very little. My aim in preparing and reading this paper has been to improve our knowledge of the subject—yours by anything you may learn, and mine by any criticisms which I am sure will be forthcoming.

The paper is based upon the analysis of the histories of 197 patients complaining of low back pain and treated by me in private practice during the past three years, upon books and articles I have read, and upon scraps of knowledge I have gained from other medical men. I shall make no attempt to treat the subject of backache exhaustively—that would be quite impossible in the course of an evening. I shall merely describe the way I deal with a patient who comes to me complaining of a low back pain.

I submit that we should approach the problem in exactly the same way as we would if the patient had organic disease of the nervous system. We should take a careful history, for this might provide us with a clue to the pathological process which is present, and we should make a careful examination in order to localize the anatomical site of that process. Only thus can we attempt to make a diagnosis, and it is upon the accuracy of this diagnosis that our success or failure in treatment will depend.

THE HISTORY.

First let us consider the history taking. The duration of the complaint will be noted. The onset is particularly important, and we must note the relationship, if any, to trauma, dental conditions, pregnancy, confinement to bed *et cetera*. In the case of trauma we must note whether the violence is direct or indirect. In the latter case it is not sufficient to know that the

backache followed a blow, a slip, or a lift; we must know if possible the precise position of the back and the nature of any movement occurring in the back at the time of the trauma. For example, a straight lift in which the only movement is extension of the back might tear a muscle origin, but could hardly lead to a sacro-iliac subluxation. A similar lift combined with slight rotation of the body could be responsible for either condition.

Next we shall ask the patient to describe the course of the complaint—whether the pain is continuous or occurs in attacks. In the latter case, we must ask whether the patient has noticed any factors which appear to precipitate attacks. Finally, we need a description of the type of pain, its relationship to the time of the day and to movement and exercise, its situation, and its tendency to radiate and in what direction. We must therefore find out whether the patient has an ache or a sharp pain, at what time of the day it occurs, whether it is made worse by movement, and if so by what movement, whether it is made worse or better by activity, whether it is central or situated more on one side than the other, whether it radiates to the abdomen, buttock, thigh or leg, and if the thigh, to what part of it. Some of these things may appear to be small points; but I hope to show that they may be of some importance.

We shall also note any other symptoms of which the patient may complain and make our routine inquiries about appetite, weight, urinary system, bowels, menses and past history.

THE EXAMINATION.

Next we proceed to the examination of the patient. First, a general examination is made, particular attention being paid to the teeth and tonsils. A pelvic and rectal examination may have to be made. Secondly, a special examination of the back is carried out. Thirdly, the central nervous system must be investigated.

The Special Examination of the Back.

The object of the special examination of the back is to determine the anatomical site of the lesion. Let us therefore consider for a moment the anatomical structures in the back which may be responsible for the pain. These are: (i) the subcutaneous fat, (ii) the muscles, their sheaths and tendinous insertions, (iii) the joints, which may be divided into inter-

¹ Read at a meeting of the Western Australian Branch of the British Medical Association on November 18, 1942.

vertebral, lumbo-sacral and sacro-iliac, (iv) the bones—vertebrae and iliac bones, (v) ligaments, (vi) cartilages, (vii) the spinal cord, its membranes and the peripheral nerves.

The examination must, as far as possible, test each one of these structures. It is carried out in exactly the same way as the examination of a knee joint (inspection, palpation, examination of normal and abnormal mobility), but in the case of the back it is more convenient to adopt a different order. Before one commences the examination the patient must remove sufficient clothing; males must be stripped, and females may be allowed to retain their brassières and "panties".¹

The patient is first examined in the standing position and inspected from the front. One notes the presence of obesity, the weight distribution on the two legs, the position of the anterior superior iliac spines—then one inspects the feet and notes whether they are flat. Next one inspects the patient from the side, noting the shape of the lumbar curve and the presence of any flattening, lordosis, deformity or depression above the sacrum, as is seen in spondylolisthesis. Finally one examines the patient from behind. The line of the vertebral spines is noted and scoliosis is looked for. The position of the posterior superior iliac spine is noted. The patient is now asked to bend slowly forward and touch his toes. Note the mobility of the spine and the effect on any deformity, and ask the patient whether this movement causes any pain. The patient is then told to resume the erect posture, and one notes whether extension causes pain. Next lateral flexion in both directions is carried out, any pain occurring on movement being again noted.

Secondly, the patient is examined in the sitting position. One notes the weight distribution on the *tuber ischii* and the shape of the lumbar curve (it should now have straightened). Rotation movements of the lumbar portion of the spine are tested and the occurrence of pain is noted.

Thirdly the patient is placed in the prone position. He will invariably rest his forehead on his forearms and thus tighten his sacrospinales, so he is asked to let his arms lie by his sides. These muscles are now palpated lightly to demonstrate any spasm. Next one palpates for areas of oedema, fibrositic nodules, areas of fibrosis and tenderness in the lumbar and gluteal muscles. The vertebral spines and the sacro-iliac joints are palpated and any pain occurring on pressure is noted. The lumbar part of the spine is now hyperextended and the patient is asked whether pain has been caused (Figure I). In some cases it is necessary



FIGURE I.

Hyperextension of the lumbar part of the spine.

to search for hot areas in the back. A towel is wrung out of cold water and laid smoothly on the back. After two minutes the towel is palpated with the back of the fingers. This manoeuvre, for which I am indebted to Dr. Juett, exaggerates the difference between hot areas and those of normal temperature.

Fourthly, the patient is examined in the supine position. Straight leg raising is now carried out (Figure II). This simple manoeuvre has quite a complex effect. It stretches the sciatic nerve and the gluteal muscles, rotates the homolateral iliac bone backwards on the sacrum, and if the movement is carried to its extreme, flexes the lumbo-sacral joint and rotates the sacrum backwards on the contralateral iliac bone. During this test it is particularly important to ask the patient when pain is first felt; this point is noted and the movement is stopped there. The sciatic nerve is now stretched by dorsiflexion of the ankle

and any increase of pain is noted (Figure III). The mobility of the hip joint is conveniently tested at this stage. Next both legs are elevated together and the patient is asked to indicate whether and when pain is felt (Figure IV). The lumbo-sacral joint is now manipulated from side to side (Figure V). The lumbar spine is then hyperflexed (Figure VI).



FIGURE II.

Straight leg raising.

Fifthly, and finally, the patient is examined in the "side lying" position. The lumbar part of the spine is fixed by causing the patient to clasp the lower knee against his chest, and the iliac bone is then rotated forwards on the sacrum



FIGURE III.

Stretching the sciatic nerve.

(Figure VII). Shortening of the ilio-tibial band is now looked for by depression of the knee onto the table (Figure VIII). The lower leg is now straightened and the upper leg is allowed to hang over the edge of the table. Diagnostic manipulation



FIGURE IV.

Elevation of both legs.

is then performed (Figure IX). This pushes the ilium forward on the sacrum, stretches the lumbar muscles and rotates the spine. One notes whether pain is caused, or whether any tearing sounds or clicks are heard. Similar measures are carried out on the opposite side to complete the examination.

¹ A cinematograph film of the method of examination was shown at this stage.

Examination of the Nervous System.

I do not propose to discuss in detail the examination of the nervous system. In patients with low back pain one should always examine the muscular power in the legs, the reflexes and the responses to pin prick. In regard to the last-mentioned, it is particularly important not to neglect the perianal and



FIGURE V.
Manipulation of the lumbo-sacral joint.

perineal areas. At times it is necessary to make a complete examination of the central nervous system, including examination of the cerebro-spinal fluid for pressure and for cell and protein content.



FIGURE VI.
Hyperflexion of the lumbar spine.

Radiographic Examination.

In my opinion it is not necessary to examine radiologically every patient with a backache; but neither is it easy for me to state which patients should be so examined as a routine measure.



FIGURE VII.
Forward rotation of the ilium on the sacrum.

I would suggest that X rays be used in the following circumstances: (i) in all severe injuries, (ii) in apparently minor injuries when recovery does not occur in a month, (iii) in any backache, acute or chronic, which does not respond rapidly to treatment.

I think I have learned three things about the use of radiography in backache: (i) It is just as important to examine radiologically the mouth as the back. This applies to injuries which are not clearing up just as much as to non-traumatic backache. (ii) The lateral film should be developed and inspected before the antero-posterior film is taken, so that the radiologist can adjust the angle of the latter to conform with the findings in the former; for example, disease of the second lumbar vertebra requires an antero-posterior film taken at right angles to the body, while disease of the lumbo-sacral joint requires a considerable and variable upward tilt of the tube. (iii) Bony changes in the spine may take a long time to develop. A negative X-ray finding should therefore be accepted with caution, and the examination should be repeated in six months if the patient has not recovered.



FIGURE VIII.
Testing the ilio-tibial band.

It may be necessary to inject lipiodol into the spinal theca and then make an X-ray examination. This should not be done unless there are physical signs of organic disease of the nervous system or changes in the cerebro-spinal fluid. This completes the examination and investigation of the patient.



FIGURE IX.
Manipulation.

CLASSIFICATION.

During the past three years I have examined 197 patients with low back pain. These have been classified as follows:

Unclassified	35
Traumatic—	
Contusions	5
Rupture of the sacro-spinalis insertion	15
Rupture of the <i>gluteus medius</i> origin	2
Sacro-iliac subluxation	6
Recurrent sacro-iliac subluxation with arthritic changes	1
Sacro-iliac strain	3
Lumbo-sacral strain	2
Fractures—recent	2
Fractures—old	5
Coccygodynia	3
Herniation of the <i>nucleus pulposus</i>	1
Thickening of the <i>ligamentum subflavum</i>	1

Inflammatory, Toxic and Degenerative—	
Fibrositis	51
Spondylitis	12
Lumbo-sacral arthritis	2
Osteomyelitis	1
Adhesions	
19	
Postural—	
Postural backache	10
Postural backache and adhesions	4
Sacro-iliac strain following pregnancy	3
Flat feet	2
Muscular dystrophy	1
Miscellaneous—	
Herpes zoster	2
Paget's disease	1
Hysteria	1
Neurasthenia	1
Uterine prolapse	1
Spina bifida	1
Sacralized transverse process	1
Spondylolisthesis	1
"Loose sacro-iliac joints"	1
Acromegaly	1

197

Thirty-five patients have been unclassified for one or other of the following reasons. (i) I have been unable to follow them up and check the diagnosis (for example, patients suspected of having adhesions). (ii) There was insufficient evidence upon which to make a diagnosis (for example, patients whom I have examined only once). (iii) Some patients are still under treatment; a diagnosis may have been made, but has not been proven to my satisfaction. (iv) For some patients no definite diagnosis has been made.

Many of the classified patients I have been able to follow up over long periods—for example, up to thirty-four months. I have found this a useful check on diagnosis, and I have sometimes wondered what this classification would look like, were I but able to review all these patients in three years' time.

CLINICAL FEATURES AND TREATMENT.

The remainder of my paper will be devoted to a consideration of the features and treatment of some of these groups of disorders.

Pain due to Ruptured Sacro-Spinalis.

I have never seen a rupture of the muscle belly of the sacro-spinalis. Rupture of the fibres of origin occurred during lifting, during twisting, or in a combination of the two, and in one case whilst sneezing. Pain is felt at the site, and tenderness is present. During the routine examination of the back, pain will be caused by any manoeuvre which stretches the affected muscle. In the differential diagnosis the signs set out in Table I must be particularly noted.

TABLE I.

Lesion.	Tenderness.	Lateral Flexion to the Unaffected Side.	Straight Leg Raising on the Affected Side.
Ruptured sacrospinalis.	Of muscle origin.	Pain.	Pain occurs late.
Sacro-iliac subluxation and strain.	Over sacro-iliac joint.	Little pain.	Characteristic responses, to be described later.
Lumbo-sacral strain.	Over fifth lumbar spine and just below.	Pain variable.	Characteristic responses, to be described later.

Table II shows the recovery time in ten cases.

These figures indicate what will certainly happen in nationalized medicine.

A and C developed fibrositis six and twenty-two months later, and both were found to have dental sepsis. This may possibly explain their slow recoveries. B, I know, was a malingerer.

Six patients were traced over periods varying from six to twenty-two months, and except for A and C none had any subsequent backache. (B was traced over twenty-two months.)

The treatment of pain due to ruptured sacrospinalis at first consists in rest and relief of pain, later in massage and exercise.

TABLE II.
Time Taken for Recovery.

Type of Patients.	Number of Days.	Average.
Private practice.	4	13
	42 (A)	
	8	
	4	
Workers' compensation practice.	7	25
	8	
	22	
	11	
	12	
	43 (B)	
	53 (C)	

The injection of a local anaesthetic agent may be of help, but I have had failures. In future I shall make sure to inject the solution right down to the periosteum of the ilium (which may possibly be damaged). This is a point I have neglected in the past. If the patient is not recovering in a reasonable time (say two to four weeks) one should endeavour to find out (i) if a septic focus is present, (ii) if adhesions have developed. Although I have not seen a patient with a sacrospinalis rupture develop adhesions, the previous history of some patients with adhesions leads me to suspect that this may occur.

Sacro-iliac Joint Conditions.

It is convenient to consider sacro-iliac joint conditions as a whole and deal with individual pathological states later.

Pain is felt over the affected joint and is often referred down the sciatic nerve or to the iliac fossa. During examination it is noted that the patient tends to support the weight of the body on the unaffected leg or ischial tuberosity, and the lumbar part of the spine is concave to the affected side. Flexion is limited and painful, and tenderness is present over the joint. Hyper-extension of the spine in the prone position may cause pain, as the sacro-iliac joints are rotated by the manoeuvre. When the patient is in the supine position one may notice tenderness over Baer's point, which is two-thirds of the way from the anterior superior iliac spine to the umbilicus. McBurney's point is nearer the iliac spine. One of my patients had her appendix removed—it was supposed to be a septic focus causing sciatica. A sacro-iliac support subsequently relieved both pains.

Straight Leg Raising in Sacro-iliac Conditions.

When straight leg raising was carried out on a patient with sacro-iliac strain, the following signs were elicited: (i) elevation of the leg on the affected side caused pain at 45°; (ii) elevation of the opposite leg caused pain at 90°; (iii) elevation of both legs caused pain at 60°. Note that straight leg raising on the affected side causes pain early, while on the unaffected side it does not cause pain until late. This is because the ilium on the unaffected side is fully rotated forwards on the sacrum before the manoeuvre starts to rotate the sacrum forward on the ilium of the affected side. The raising of both legs together causes pain at an intermediate position, because the pelvis is no longer anchored, and some of the movement is taken up by the lumbar part of the spine before the sacro-iliac joints begin to move.

Dorsiflexion of the ankle after straight leg raising does not increase the pain—a point of differentiation from sciatica. Forward rotation of the ilium on the sacrum in the "side lying" position may cause pain.

Sacro-iliac Subluxation.

I have not seen a forward subluxation of the ilium; all my six patients have had backward displacement.

The cause is usually a rotation movement of the lower part of the back, often while the patient is off guard; it may be quite a trivial movement; for example, one of my patients produced the condition by leaning over the side of her bed to pick up her spectacles from the floor. This same movement replaced an apparently subluxated joint after an unsuccessful manipulation in another of my cases.

Pain comes on immediately after the injury, and there are signs of sacro-iliac involvement. Classically, pain is present only on backward rotation of the ilium (that is, on straight leg raising) and not on forward rotation; but I have not found

this to be a constant feature. On one occasion I could feel the displacement—the posterior superior iliac spine was raised in comparison with the normal side. On the affected side the anterior superior iliac spine may be raised and the posterior superior iliac spine lowered.

Treatment is to reduce the subluxation as soon as possible. The back is manipulated in the way you have already seen on the film, and the joint slips into place with a click. There is only one click, in contrast to the numerous tearing sounds which one hears in the presence of adhesions. Great relief is experienced, and the patient should get about at once.

I have had six patients with this condition. All were given manipulative treatment in my surgery at the first visit, with immediate relief in four cases. One patient replaced his own joint, after I had failed, by leaning over the edge of his bed to pick up his spectacles, as previously mentioned. The sixth patient was subsequently given manipulative treatment under anaesthesia, with immediate relief. Three of these patients have been followed over a period of twenty-four months each, and none has had any further trouble.

The subluxation may, however, be recurrent and lead to arthritic changes in the joint. I have had one further patient with this type of condition. He is wearing a sacro-iliac support, so far with relief. Should it fail, he could have the joint stabilized surgically.

Sacro-iliac Strain.

I have had six patients with sacro-iliac strain. In three cases the condition was brought on by trauma, in each instance a rotation movement of the lower part of the back. Pain came on immediately, and there were classical signs of sacro-iliac disease. Pain was produced by rotation of the ilium in either direction; this is in contradistinction to sacro-iliac subluxation, in which pain occurs chiefly in rotation of the ilium in the direction of the subluxation. The treatment of this condition is no different from that of a sprain in any other joint—that is, (i) rest in the acute cases, and (ii) when the pain is subsiding or in the less acute cases, apply a support and get the patient up and about just as you would with a sprained ankle. There is no necessity to have an expensive brace made. I have been in the habit of inducing patients to make a support from a piece of duck blind about five inches wide, fitted accurately round the hips between the anterior superior iliac spine and the great trochanters, and drawn tight in front by two straps with buckles. This only costs about three shillings, and I have found it very satisfactory. The three patients mentioned have been traced for ten, twelve and thirty months. The first developed adhesions six months after his injury and had to undergo manipulative treatment. The others remained well.

The other three patients with sacro-iliac strain noticed their pain first during pregnancy, and the pain persisted after delivery. The opening up of the sacro-iliac joints and the abnormal posture during pregnancy are the aetiological factors. Possibly the persistence of the pain after delivery is due to the joint's not returning to the *status quo ante*. Supports of the type I have mentioned were applied in each case, and relief resulted. One patient also had adhesions which required manipulative treatment. Two patients were followed over a period of ten months. They were both able to dispense with their supports in six months and had had no further pain.

Lumbo-Sacral Joint Conditions.

In lumbo-sacral joint conditions pain is not necessarily central; it may be more on one side than the other, and it may be referred down one or both legs. Tenderness on firm pressure is elicited over the fifth lumbar spine and over the joint. Flexion and extension are limited and painful.

Straight Leg Raising in Lumbo-sacral Conditions.

When straight leg raising was carried out on a patient with lumbo-sacral arthritis, elevation of either leg caused pain at 60°, and elevation of both legs caused pain at 45°. Note that elevation of one leg causes pain late because the movement rotates the ilium fully forwards on the sacrum before the latter commences to move. Elevation of both legs together moves the lumbo-sacral joint much earlier than in the previous test. Manipulation of the lumbo-sacral joint in one or both directions in the manner previously shown on the screen may be painful.

Lumbo-sacral Strain.

There are two patients in the series with lumbo-sacral strain. One strain followed a heavy bump on the buttocks against the edge of a table (the violence to the lumbo-sacral joint was thus

indirect); the second occurred whilst the patient was lifting a steel plate weighing 150 pounds. In both instances the pain was over the affected articulation, and the signs were classical. The patients were treated by rest alone, and they recovered in seven and fourteen days respectively. The first patient is well after five months.

Lumbo-sacral Arthritis.

I have two patients with lumbo-sacral arthritis, an interesting condition. Both patients had pain in the back and legs, classical signs of lumbo-sacral disease, an area of heat over the articulation, no loss of weight over a prolonged period as would be expected in tuberculosis, and neurological signs in the legs. Both patients had presented normal X-ray appearances early in their history, and both showed arthritic changes in later X-ray films. The first patient had a septic tooth removed, with no relief, before I saw her. She had an Albee operation performed nine months ago and is perfectly well. The second patient was much better two months after the removal of a devitalized tooth.

Fibrositis.

Fibrositis accounts for 51 of my patients—about one-quarter. In most cases the causative factor has not been obvious. Exposure to cold has apparently been responsible in four cases and dental sepsis in addition to rupture of the sacrospinalis in three.

Fibrositis may be acute or chronic. In the acute cases the pain is constant, with severe exacerbation on movement. The patient therefore tends to hold himself rigid or to lie quite still in bed. In the more chronic cases there is a dull ache, which is at first aggravated by movement, but which gradually wears off with activity. In my experience this improvement with activity is a distinguishing feature of fibrositis and spondylitis. In adhesions, on the contrary, the pain tends to appear with activity. The pain in fibrositis is also frequently worse at night.

In my 51 cases the anatomical site of the lesion has been the sacrospinalis in 38 cases, the *gluteus medius* in 10, both in one case, and the lumbar fascia above the iliac crest in two cases. Clinically the lesion would appear to be, first, a tender, soft, oedematous swelling, later a firm nodule, and finally an area of fibrosis. Here I am concerned with the first two. Areas of fibrosis I shall deal with under the subject of adhesions. The firm nodule in my experience is about three times as common as the soft, oedematous swelling. The affected muscle is usually in a state of spasm; you may have to make the patient relax in order to palpate the lesion, and it can be detected only by light palpation. Firm palpation will throw the muscle into spasm and prevent your feeling the lesion. Deep lesions cannot be palpated, and they reveal themselves only by overlying tenderness and spasm. I admit that one cannot make a positive diagnosis of fibrositis on the presence of an area of tenderness only, and in such cases I have usually made my final diagnosis on other factors, such as a history of or the presence of fibrositis elsewhere, the absence of any other demonstrable disease, and the following up of these patients.

The lumbar part of the sacrospinalis being a thick muscle, and the *gluteus medius* being a thin one, one would expect to palpate lesions more frequently in the latter than in the former, and this has been my experience. Lesions were palpable in the sacrospinalis in 11 out of 38 cases, and in the *gluteus* in seven out of ten.

During the routine examination of the back, pain will be caused whenever the affected part is stretched.

In three cases sciatic neuritis was also present—once in association with a sacrospinalis lesion, and twice with gluteal lesions.

Referred pain was associated in two cases. It was felt in the front of the thigh in a sacrospinalis lesion and in the back of the thigh in a gluteal lesion. In passing, it may be noted that pain may be referred to the leg from lesions in the sacrospinalis or *gluteus* which do not produce local pain. Such cases have not been included in this series.

I have had fibrositis and can speak of the treatment from personal knowledge. Treatment in the acute cases consists in relief of pain, rest, and the application of heat. The administration of free fluids and a purge and the encouragement of sweating all help to eliminate toxins and have a good effect. A great many patients recover with this treatment alone. In the phase of recovery, and in chronic cases, massage and exercise are

indicated. The massage should be applied directly to the nodule; it should be firm, and the masseur should endeavour to break down the nodule by direct pressure. Patients' relatives can be taught how to do this themselves.

I am content to deal with obvious septic foci and do not order full dental radiological examination except in persistent cases. I am of the opinion that dental sepsis plays a not inconsiderable part in the production and persistence of fibrositis. I have had far more success by treating dental sepsis in this disease than I have had failures. Dental sepsis was found in 15 patients.

One was of great interest. He had a focal reaction following dental treatment—and this I have found to be of good prognostic significance; but it did not clear up as expected. A month later a sequestrum was discharged from his alveolus, and he recovered within a few days.

I began injecting fibrositic nodules with local anaesthetic agents in 1931. I have had good results, but they have been extremely few in number. As the years have gone by I have injected fewer and fewer, and now I inject only very tender nodules so that I can break them down by firm massage while they are insensitive.

Twenty-two of my patients have been followed up for periods varying from six to thirty-four months and have remained well. Of these 22, eight had palpable fibrositic lesions.

Spondylitis or Generalized Spinal Arthritis.

I find it convenient to divide spondylitis into three types, each analogous to and possibly occurring in association with a corresponding type of arthritis in the joints of the limbs.

Toxic Spondylitis.

I have had four examples of toxic spondylitis in this series. Focal sepsis is responsible for the condition. The patients complain of pain and stiffness in the back on rising in the morning. These diminish and gradually disappear as the patient gets about. The signs are limitation of movement and pain on movement of the affected part of the spine. Usually tenderness is present over the lumbar spines and the sacrospinales; these muscles are usually in a state of spasm. Diagnosis depends upon rapid recovery following the eradication of focal sepsis; in each of my cases dental sepsis was responsible. One patient also had adhesions which needed manipulation.

Ankylosing Spondylitis.

Ankylosing spondylitis, I think, is sometimes the result of an untreated toxic spondylitis—more often it appears to be idiopathic. I have had one patient with the former type of spondylitis and two with the latter. In early cases the symptoms and signs are similar to those of toxic spondylitis. Later the spine becomes ankylosed, and as it does so the pain lessens. Radiography then reveals calcification of the spinal ligaments. The treatment is to eradicate any focal sepsis, and if possible to see that ankylosis occurs with the spine in a proper position.

Osteoarthritic Spondylitis.

Osteoarthritic spondylitis occurs in middle and old age, and I have seen five examples. In addition to low back pain there are often root pains. Examination reveals limitation of movement of the spine and sometimes ankylosis. The chief radiographic sign is the presence of osteophytic lipping of the vertebrae. Treatment is symptomatic; but I have noticed that a course of diathermy sometimes relieves the patient for quite a long time.

Comment.

I have treated these three types of spondylitis as though they were separate diseases; but I would mention in passing that the types often overlap to a greater or lesser degree.

Postural Backache.

Postural backache may be defined as pain arising from failure of the muscles and ligaments to maintain the normal curve of the lumbar part of the spine. It may arise in three classical ways.

1. *Lordosis strain.* This may result from loss of tone of the abdominal muscles, which allows the sacrospinales to hyperextend the lumbar part of the spine, or from pregnancy, or obesity; in this case the patients tend to adopt the lordotic position in order to keep their centre of gravity over the legs. Pain appears to arise from chronic stretching of the anterior spinal ligaments.

2. *Flat back strain.* Flattening of the lumbar curve may occur in confinement to bed, particularly if the Fowler position is adopted, and in driving a motor car with the seat too far back. Pain appears to arise from stretching of the sacrospinales and the posterior spinal ligaments.

3. *Lateral curvature strain.* Lateral curvature of the lumbar part of the spine may occur as a compensatory phenomenon, for example, if one leg is short. Here there is a continual strain on the muscles and ligaments on the convex side of the curvature.

Postural backache may be complicated by the presence of adhesions, and these adhesions may continue to cause pain after the abnormal posture has been corrected. My fourteen cases have all been examples of lordosis strain. In six the cause was lack of tone of the abdominal muscles; one of these patients had complicating adhesions, two were also obese. In three a lordosis strain had persisted after pregnancy, and all these patients had adhesions. In the remaining five cases the origin of the lordosis strain was obscure.

Generalized low back pain of an aching type occurs chiefly towards the end of the day and is relieved by rest. Sometimes the patients will tell you they cannot go without a corset. On examination, one possibly notes the lax abdomen, round shoulders and lordosis. In lesser cases I find it difficult to decide whether the normal curve of the lumbar part of the spine is exaggerated or not, but one does note that when the patient is examined in the sitting position the lumbar curve does not flatten out as it should. The only other constant sign is pain on hyperextension of the spine.

The treatment of lordosis strain is as follows. (i) Exercise is given to improve the tone of the abdominal muscles—not back exercises, which are commonly prescribed. (ii) A support is applied, which exerts its pressure on the lower dorsal region of the back, the sacrum, and the lower half of the abdomen—not one which exerts pressure on the mid-lumbar region, which is often the case.

Flat Back Strain.

Flat back strain is a condition I have seen more particularly as a complication of other types of backache, and it has often arisen in the following way. A patient with backache goes to bed, and that bed too frequently has a sagging wire frame and a soft mattress. The lumbar part of the spine then becomes flexed and a flat back strain arises. I should like to emphasize that whenever a patient suffering from backache is put to bed, he should be on a firm bed, preferably on fracture boards, and a small support should be placed under the lumbar part of the spine to maintain its normal degree of curvature. A hot water bag serves this purpose admirably, and of course it can also be used to provide heat when it is required.

Adhesions.

Adhesions are of frequent occurrence in the back. They may be quite symptomless, as any of you can prove to your own satisfaction by carrying out manipulative measures on patients who have no backache. Now and again you will hear the tearing sounds which occur as the adhesions are broken down. On the other hand, adhesions may be a complicating factor in, or a sequel to many types of backache. Here I am concerned only with those cases in which adhesions occur as a sequel to some other pathological process. I have had 19 such cases. The adhesions appeared to follow lordosis strain in six cases, flat back strain in two, fibrositis in five, trauma in three. In three cases the origin of the adhesions was obscure.

The pain produced by adhesions tends to be worse with activity and to be reduced with rest. The only diagnostic sign is that tearing sounds are heard on manipulation. Other signs found on routine examination of the back seem to vary with the site of the adhesions. One can accept adhesions as being the sole cause of a backache only if manipulation, and manipulation alone, cures the pain. Seven of my 19 patients have been followed up for periods of six to twelve months and have remained free of pain.

CONCLUSION.

The subject of backache is not an easy one. I have endeavoured to present it as though it were a simple and straightforward problem in order to provide you with a clear picture of some of the more common types of low back pain, and I hope I have succeeded in doing so, for it is only when we know these common types of backache thoroughly that we begin to recognize the uncommon and the mixed types which we meet.

WAR WOUNDS IN THE LIBYAN DESERT.

By JOHN DEVINE,

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RECENTLY there have appeared many articles which describe the treatment and the results of treatment of war wounds as carried out in the western desert of Egypt and Libya. It would appear that the results obtained were on the whole better than those obtained during the 1914-1918 war. This fact has been ascribed to improved surgical technique, to chemotherapy, to climate, and by some to the presence of less virulent organisms in the terrain. From the point of view of assessing the results of treatment of war wounds in our own soldiers, a study of war wounds among Libyan Arabs, who usually received no chemotherapy, and who were often not treated for days after they were wounded, may be of interest.

Naturally enough, though many Arabs presented themselves for surgical treatment, only a small percentage had received war wounds, and many of these refused treatment because of the Arab theory that it is better to die than to go to Allah mutilated.

The patients whose histories are here reported were treated while the writer was attached as a surgeon to a British casualty clearing station at Derna early in 1941, and were seen during the first few weeks of work with this unit, for during the last few weeks with it, the continuous rush and bustle and everlasting hard work consequent upon the first retreat from Benghazi made the taking of Arab case histories impossible; moreover, when we retreated, our Arab patients had to be left in charge of Libyan orderlies with notes for the enemy as to their treatment.

This casualty clearing station operated in a fine Italian hospital. The wards were large, clean and airy, and the floors tiled. There were two modern operating theatres complete with shadowless lights, instrument cabinets and up-to-date operating tables. The X-ray and physical therapy departments, both fully equipped, were intact and in full working order.



The Arab side of the hospital consisted of a long building in which there were a number of large rooms holding four beds each. The Arabs lay on canvas mattresses, and with a view to keeping down lice, were shaved when they entered hospital. Their visitors came in droves and brewed tea over a glowing brazier in the centre of the ward. Nursing was difficult. It was carried out by Senussi (Arab) orderlies under the command of a somewhat harassed British sergeant, who, nevertheless, was so well trained that he was as good as any sister. A large number of female Arab patients also came under our care, and it was necessary to employ an Arab midwife as a nurse. At certain times these female patients were considered unclean and could not be touched by anyone for fear of defilement; at other times the Arab nurse was

considered unclean and therefore could not touch any of the patients without defiling them; all of which made for great difficulty in arranging a duty roster. Medical stores for the Arabs could be spared only in small quantities, as, of course, we were functioning as a military unit for our own troops. Red Cross units, both British and Australian, helped us whenever they could.

Reports of Cases.

CASE I.—Mohamed M., aged about twenty years, was admitted to hospital for treatment on March 20, 1941. Three days before he had picked up a hand grenade, which had exploded in his hand. He had been brought in some forty miles from the neighbourhood of Cirene by his brother, who had bound up his wounds for him. Both his hands were just a bloody pulp, and had been wrapped in an old, stinking burnous. A piece of dirty old trousers had been wrapped round a gaping wound of the left calf.

Operation was performed under ether anaesthesia given by the "open" method. The left hand was amputated one-third of the way up the forearm, and a few silkworm gut sutures were used to approximate the skin flap over sulphanilamide powder and "Vaseline" and a glove drain, which projected from the wound at each end. Traumatic amputations of several fingers of the right hand were completed, and various lacerations were repaired. The large, stinking, infected wound of the left calf was explored, and in the bottom of it was found a large, heavy piece of bomb and about three square inches of cloth from the trouser leg. *Débridement* was performed and the skin edges were trimmed, a wound some four and a half inches by one and a half inches being left. The hole made in the deep fascia and the muscle was enlarged, and the fascia was split to release the considerable tension therein.

Three weeks later there had been no sepsis of the amputated arm or repaired hand; the wound of the leg was considerably smaller, and was granulating up from the bottom with very little discharge.

When one considers the time lag before treatment was instituted, and the state of the patient on his arrival at hospital, his progress was remarkable.

CASE II.—Abu B., aged about twenty-five years, was admitted to hospital on March 24, 1941. He gave a history that two hours before one of his friends had shot him through the left forearm at a distance of one metre. On examination, a through-and-through bullet wound of the anterior portion of the left forearm was noticed. Ulna and median nerve function was still present.

Under "Pentothal" anaesthesia the skin edges were excised, and the track was opened up on each side and filled with sulphanilamide powder and "Vaseline".

Fourteen days later, the wound had healed by first intention, and function was well-nigh perfect.

CASE III.—Asinch V., aged about thirty years, presented himself on March 28, 1941, after he had had his left hand almost completely blown off at the wrist by a land mine explosion which had occurred twelve hours before. On examination, a number of ragged tendon ends were seen to protrude from a dirty and blackened stump of a wrist.

Under ether anaesthesia given by the "open" method, an amputation was performed through the lower part of the forearm. Three silkworm gut sutures were used to approximate the flap over sulphanilamide powder and "Vaseline" on a glove drain, which projected from the wound at each end. The wound did not become infected, and healing was uneventful. After several days the arm had to be put in a plaster cast because of the interest shown in it by the relatives.

CASE IV.—Osman N. was aged about twenty years. This young Senussi was admitted to hospital for treatment on March 28, having been shot through the ulnar side of the left hand by a high-velocity bullet at close range; but he had no very clear story as to who had done the shooting. On inspection, it was found that his left little finger, part of the palm of his hand and much of his fifth metacarpal bone had been blown away. Under ether anaesthesia given by the "open" method the skin edges were excised and the wound was subjected to *débridement*. Much dead muscle and the remaining portion of the fifth metacarpal bone were removed, the skin edges were loosely approximated with silkworm gut sutures, and the whole was covered with a "Vaseline" dressing. Over a week later there was no sign of any infection or sloughing of the hand.

CASE V.—Farag A., aged about thirty years, was admitted to hospital on March 31, 1941. He had been holding an

Italian detonator in his hand when it had exploded; it had blown off most of his thumb and ring finger, and caused multiple wounds of the forearm and palm. Under anaesthesia with "Pentothal Sodium" given intravenously, the skin edges were excised, the amputation was completed, and the smaller wounds were subjected to *débridement*. As the accident had occurred an indeterminate time before the patient's admission to hospital, a skin defect one inch in diameter on the palm of the hand was not immediately skin grafted. Over a week later, no infection of the wound had occurred.

CASE VI.—Hussein L., aged about twenty years, was admitted to hospital on April 2, 1941, with the history that six days before he had been playing with a small red Italian hand grenade which had exploded.

On inspection, he presented a badly smashed right hand; the proximal phalanx of the thumb was smashed to pulp, the middle finger was represented by only a few shreds of tendons and the distal phalanx of the ring finger was almost completely absent. All these wounds were infected and pouring pus; but there was no cellulitis of the arm, and no symptoms of any general toxæmia were present. Examination of the left hand revealed several infected lacerations and some loss of skin of the palm.

At operation the infected remnants were trimmed away, a skin flap being left for later use. The wounds were dressed with "Vaseline" gauze and a plaster slab was applied. One week later the infection had subsided and the flaps were closely approximated. The patient was lost sight of after a fortnight, when his wounds had almost completely healed.

CASE VII.—Maftah F., aged about thirty-five years, was admitted to hospital on April 4, 1941, with a depressed fracture of the frontal bone and a considerably lacerated scalp. He was suffering from severe shock, and was treated with several pints of plasma reconstituted from the dried plasma as then supplied to British units. When he was well enough to stand operative interference, he was taken to the operating theatre, where, under "Pentothal" anaesthesia, the depressed fracture was elevated, the skin edges were excised and extensive suture of his scalp was performed. One week later he was doing very well; no wound infection had occurred.

CASE VIII.—Mahametbu M. was admitted to hospital on April 4, 1941, with concussion and an extensively lacerated scalp. The head was shaved, and under "Pentothal" anaesthesia *débridement* was performed, the wound was dusted with sulphanilamide powder, and silkworm gut sutures were inserted. Four days later the wound looked quite clean.

CASE IX.—Awab M. was aged ten years. While playing around in the desert one month before his admission to hospital on April 2, 1941, this lad kicked an Italian hand grenade lying in the desert sand, and the grenade exploded. He presented himself for treatment with a pulped, infected and almost necrotic great toe. Amputation was performed at the metatarsal-phalangeal joint, and the edges were approximated with a few silkworm gut sutures over a piece of "Vaseline" rubber glove drain brought out at each side. Healing was uneventful.

CASE X.—Mahmoud S., aged about twenty-five years, was a Senussi. On May 11, 1941, four hours before his admission to hospital, he was shot by another Senussi with a high-velocity bullet; it caused a wound of entry just above the penis, and lacerated the lower abdominal wall as it travelled upwards parallel to the inguinal canal. He had developed a large hæmatoma of the cord.

The wound edges were excised, blood clots were removed, and the wound was covered with sulphanilamide powder and then "Vaseline"; loose approximation sutures were then applied to that part of the wound involving the abdominal wall. He was closely watched, but convalescence over ten days was uneventful and no infection occurred.

Mention may also be made of one of those patients whom we were not allowed to treat because of the Arab desire to die rather than lose a limb by amputation.

CASE XI.—Mahomet —, aged about forty-five years, had been struck by a fragment of a British aerial bomb two months before I was called to see him on March 26, 1941. He was lying on a mat on the ground in an Arab house in the middle of the town, gasping, wasted to a shadow and with a terrible infection of a shattered, pulped, comminuted and compound fracture of both bones of his left leg. His leg had been roughly splinted by means of packing case boards tied by rope on each side of his fracture. Even at this late stage he resolutely refused to have any treatment with might involve amputation, and he died two days later. Slow sepsis of two months' duration had finally killed him.

He had had every opportunity to develop a virulent infection, because he had been nursed lying on the floor of an insanitary, smelly mud hut, with no dressings over the wound, and dust, dirt and excreta in plenty everywhere.

Discussion.

The eleven cases quoted show that among these Arabs who had received war wounds, and who had had no sulphanilamide therapy prior to admission to hospital, sepsis was late to begin and mild when fully developed. None of the amputations performed revealed any sign of sepsis whatever, and though most of the wounds had been grossly contaminated by dirty clothing and soil many hours before being treated, there was little evidence of local infection and no evidence of general infection. A grossly infected and shattered leg had taken two months to kill the untreated patient by slow sepsis. These results of treatment compare favourably with much greater numbers of military cases of a similar severity, in which sulphanilamide therapy, both general and local, had been used. It seemed the general rule that the majority of war wounds among soldiers, which were seen by the writer in Tobruk, Derna and Benghazi, showed a mild degree of local sepsis at one time or another.

The long delay of the onset of sepsis in wounds, so often noted in the desert, was usually considered to be a blessing bestowed by sulphanilamide therapy. This delay was, however, seen among some of our military patients who had lain out in the desert for days without treatment. It was seen also in Arabs who did not have the benefit of treatment. It may be that the Arabs' wounds were not so often subjected to infection by hæmolytic streptococci from the nose and throat of the many examining attendants as were those of our own wounded, and that the Arabs therefore may not have needed chemotherapy for these specifically controllable organisms.⁽¹⁾ It may be that the Arabs were naturally more resistant to the germs in their own environment. But probably this delay in the onset of sepsis, and its mildness when it did occur, were really due to the dryness of the climate and the lack of virulent organisms. It is not unlikely that in Libya the war wounded of all races came to no special harm from sepsis, so long as they had adequate drainage from their wounds, and if enough of the deep fascia had been removed either by the wounding missile or by the surgeon to allow of relief of tension in muscle and fascial space. "Vaseline" as a means of promoting drainage proved especially useful.

Conclusion.

Eleven cases of war wounds among Libyan Arabs are presented. The patients had received no sulphanilamide therapy before their admission to hospital, and in most cases the delay of onset of sepsis and its mildness when it did occur contrasted favourably with cases of a similar severity occurring among troops who had received sulphanilamide locally or generally. This seems to suggest that conditions in the Libyan desert were such that sepsis from war wounds was usually late in onset and most often mild in character.

Reference.

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THE SULPHAGUANIDINE TREATMENT OF SHIGA DYSENTERY IN NEW GUINEA.

By J. J. GARD,

Captain, Australian Army Medical Corps.

This report describes the results of treatment in 25 cases of bacillary dysentery due to *Bacterium dysenteriae* Shiga at an Australian general hospital in New Guinea during the latter months of 1942 and the early months of 1943.

Although many patients suffering from dysentery were admitted to hospital during the campaign, Shiga infections

were not observed until the closing stages. Since this type of dysentery is common in Japan, it is possible that the enemy was the source of infection. The great majority of the patients had been in close contact with the enemy and had occupied ground fouled by him.

The Shiga dysentery encountered was, in conformity with general experience, on the average more severe than infections with *Bacterium dysenteriae* Flexner or Boyd. It is not, however, safe to predict the type of infecting organism from the symptoms. Fifteen cases were provisionally and correctly diagnosed as probable Shiga infections because of their severity. However, three cases of similar severity provisionally diagnosed as Shiga dysentery proved to be Flexner infections when the stools were examined by cultural methods.

The stools in all cases but one showed the typical inflammatory exudate of bacillary dysentery, consisting of red blood corpuscles, polymorphonuclear leucocytes and macrophages, the pus cells greatly predominating. In the remaining case, bacteriologically proved, the stools showed an indefinite exudate only, with occasional polymorphonuclear leucocytes and red blood corpuscles.

Clinically, the symptoms in these cases were the characteristic symptoms of severe bacillary dysentery. The onset was usually slightly more insidious than is the rule in Flexner or Boyd infections. A common history was one of the mild abdominal colic, from four to eight motions occurring during the first twenty-four or forty-eight hours, succeeded on the second or third day by severe colic and tenesmus with the passage of from 20 to 40 small blood-stained mucoid stools per day.

The temperature was usually only slightly raised, varying from 99° F. to 102° F. The pulse rate was between 80 and 90 per minute. The patients looked ill and dehydrated. Vomiting was rare; it occurred in only two cases and was not persistent.

Treatment.

An initial dose of two to four drachms of sodium sulphate solution was given. This was followed in two hours by seven grammes (fourteen tablets) of sulphaguanidine; then 3.5 grammes (seven tablets) were given every four hours; the sulphaguanidine treatment began at 6 a.m. and finished at 10 p.m., so that five doses were given per day. This treatment was continued until the number of stools in twenty-four hours was five or less, when the dosage was reduced to 3.5 grammes three times

a day until the number of stools was normal for two or three days; then it was discontinued.

In severe cases associated with much dehydration and exhaustion the initial dose of saline solution was dispensed with, and seven grammes of sulphaguanidine were given immediately; this dose was followed by 3.5 grammes given every four hours.

In several cases seven grammes of sulphaguanidine were given as the last dose at night; this measure appeared to prevent an exacerbation of symptoms, which otherwise sometimes occurred in the morning.

One-quarter of a grain of morphine and one one-hundredth of a grain of atropine were given in all cases associated with abdominal pain; relief was immediate. In some cases 20 to 30 minims of *Tinctura Opii* were given in place of morphine, with relief.

Bowel washouts in two cases gave considerable relief from straining and tenesmus; one pint of normal saline solution was run in slowly and retained for five or ten minutes.

Fluids were given in the form of water, cordials, fruit drinks and barley water (from four to six pints per day).

Diet.

The routine followed in all severe cases was to commence with Diet I as shown on the undermentioned list. After the first twenty-four hours patients were given Diet II, and this was continued until the number of stools was normal for two days, when Diet III was allowed. Patients were not starved, and in some cases Diet II was given from the commencement if the patient was not nauseated or had an appetite. (The selection of foods for these diets was restricted at the time when these 25 patients were under treatment.)

Diet I.	Diet II.	Diet III.
Cordials.	Arrowroot.	Eggs.
Glucose.	Eggs when obtainable.	Meat.
Beef tea.	Bread or toast.	Vegetable <i>purée</i> .
Jelly.	Custard powder.	Milk foods.
Fruit juices.	Treacle.	Salmon.
Arrowroot.	Honey or jam (seedless).	Stewed fruit.
Tea (sweetened).	Tinned fruit.	Milk puddings.
Barley water <i>et cetera</i> .	Mashed potatoes and gravy.	
Lemon juice.	Sago.	

TABLE I.

Patient.	Duration of Symptoms Prior to Admission to Hospital. (Days.)	Duration of Treatment with Sulphaguanidine.	Total Dosage of Sulphaguanidine in Grammes.	Day of Treatment on which Normal Motion Appeared.	Conditions of Mucosa on Sigmoidoscopy after Treatment.
H.D. ..	4	10	137	10	Normal.
J.R. ..	1	20	221	7	Hyperæmic areas; no ulceration.
D.J. ..	3	10	144	4	Normal.
A.P. ..	2	13	196	7	Hyperæmic areas of healing.
J.S. ..	2	19	252	19	Hyperæmia and ulceration on 6th day of treatment; practically normal on 22nd day.
T.C. ..	1	19	161	6	Normal.
R.F. ..	1	14	203	9	Hyperæmic on 8th day, normal on 18th day.
S.B. ..	3	10	154	8	Normal except for rare patch of hyperæmia.
H.T. ..	3	22	301	22	Small hyperæmic patches on 24th day, normal on 29th day.
E.G. ..	Not recorded.	19	298	7	Intense hyperæmia without ulceration on 16th day, normal on 27th day.
M.R. ..	2	17	266	17	Slight hyperæmia at recto-sigmoid junction only on 18th day.
A.A. ..	5	22	294	22	Occasional hyperæmic spots on 20th day.
A.C. ..	1	10	147	9	Numerous hyperæmic patches on 9th day, almost normal on 14th day.
G.T. ..	3	16	223	15	Scattered hyperæmic patches on 19th day.
M.W. ..	2	16	245	15	Slight oedema and hyperæmia, no ulceration on 20th day.
E.T. ..	5	13 ¹	346 ¹	11	Almost normal on 13th day.
R.G. ..	1	18	235	19	Normal on 18th day.
P.H. ..	4	13	175	7	Some patchy oedema and hyperæmia. No ulceration on 17th day.
A.A. ..	1 ¹	9	133	11	Normal on 16th day.
H.M. ..	1	5	59	6	Practically normal on 11th day.
J.S. ..	1	12	165	8	Slight hyperæmia, no ulceration on 13th day.
H.W. ..	4	12	165	12	Widespread hyperæmia and abundant mucopus on 5th day. Marked improvement, no pus, and only a few hyperæmic patches on 16th day.
J.H. ..	5	15	235	14	Oedema, exudate and one ulcer present on 15th day.
V.C. ..	6	8	84	9	Normal on 7th day.
F.N. ..	5	8	116	4	Slight oedema and patchy hyperæmia on 9th day.

¹ 143 grammes of sulphaguanidine given prior to admission to hospital are included.

Results.

The results of treatment with sulphaguanidine in these cases of Shiga dysentery were uniformly successful. The details are shown in Table I. The average dosage of sulphaguanidine required for cure was 152 grammes. The average number of days of treatment up to the time when the motions became normal in appearance and frequency was 11.5 days. The average period during which sulphaguanidine was administered was 13.5 days.

Specific Shiga antitoxic serum was not used, nor was it required, as the clinical response to the treatment employed was extremely rapid, usually being evident in less than twenty-four hours. No deaths occurred.

No toxic effects were observed which could be attributed to sulphaguanidine, in spite of the large doses employed. One patient received a total of 301 grammes during twenty-two days.

In five of these cases in which recovery appeared to have occurred, sigmoidoscopic examination in the second week showed that ulceration of the mucous membranes of the bowel was still present. Sulphaguanidine cannot be expected to do more than prevent the extension of those lesions which are already present at the commencement of treatment. If such lesions are large, healing may take longer than is required for clinical cure as evidenced by absence of pain or colic and passage of normal stools. It is highly desirable, therefore, that treatment with sulphaguanidine should be commenced as early as possible after the onset of symptoms, before large areas of mucosa have been destroyed. It is equally important to guard against premature discharge from hospital of patients with unhealed bowel ulcers, who are very liable to relapse. This can best be avoided by routine sigmoidoscopic examination prior to discharge from hospital of all patients convalescent from bacillary dysentery.

Summary.

The satisfactory results of treatment with sulphaguanidine in 25 cases of Shiga dysentery are described.

Acknowledgement.

The Director-General of Medical Services, Major-General S. R. Burston, has kindly given permission to publish this paper.

Reviews.

A BOOK ON FRACTURES.

From the Witwatersrand University Press, and printed at Johannesburg, comes a book by K. Colson on "Fractures and Fracture Treatment in Practice", a volume of 147 pages.¹ Mr. Colson is conductor of a fracture tutorial run in connexion with the teaching at the University. We have read the book through with keen appreciation and approval. Produced, no doubt, in the first instance for the benefit of students and graduates of the Johannesburg school, the book steps at once into the front. There are a few major textbooks with which it is obviously not designed to compete, but as a short everyday handbook we have seen nothing better, or quite as good. It is clear, succinct, practical and dependable, and despite its relatively small size it has left very little out. Its 157 illustrations are in the form of roughly drawn outline diagrams that are better than many pages of words, and they contribute greatly to the success of the book. A book such as this, if followed, will do much to raise the general standard of fracture treatment. This standard has been rising gradually, but there is still a long way to go. We shall be glad to see this book carry on the good work, not only in South Africa, but far beyond.

For the expected next edition we have a few suggestions. In listing conditions able to cause pathological fractures, the author might for our benefit in Australia add hydatid disease of bone.

On page 12, in writing of general principles of treatment, he tells the reader that the optimum time for reduction

is the first hour after the receipt of the injury. We think he would do well to press this harder, and to repeat it many times throughout the book, for it is a cardinal principle of treatment. The tardy casualness of attention to fractures in many hospitals and by many surgeons is very discreditable, prejudicing the welfare of the patient and setting a very bad example to students. There is no glamour about fractures, but they are, and should be considered, as urgent as wounds and abdominal emergencies.

In discussing the complications of fractures, our author has forgotten to include fat embolism. This complication is less rare than some may think, and is not always recognized when it occurs.

On page 55 he mentions "pro- and supinator muscles". Our language is a tolerant one, but are we narrow if we object that this is rather rough treatment of our English? Surely we can pay, as educated men, a little more respect to etymological correctness. The roots are not "pro" and "sup", but are found in the Latin adjectives "*pronus*" and "*supinus*".

On page 64 he calls the index the second finger and the little finger the fifth. To avoid ambiguity it is much better to call them the index and the little finger. The index is called the first finger by musicians.

On page 86, while recommending local anaesthesia for Smith-Petersen nailing of subcapital fractures of the hip, the author advises the injection of 20 cubic centimetres of 2% "Novocain" solution. It would be an improvement to advise 0.5% "Novocain" in 1 in 200,000 adrenaline solution, and to inject three or four times as much of this weaker solution. Then should follow a wait of not less than five minutes before the operation is begun.

On page 92, in connexion with the transverse subtrochanteric fracture, the author could mention that this is a characteristic fracture of Paget's disease.

On pages 118 and 119 we meet with our only real serious disappointment. Our author fails to direct attention to the difficulties of some posterior fractures of the tibia involving the ankle joint, and he does not mention the practical impossibility of complete reduction by any ordinary means when the fragment is displaced upwards.

We offer congratulations to Mr. Colson and the University of the Witwatersrand.

PHYSICAL DIAGNOSIS.

SINCE we reviewed the twelfth edition of Dr. Cabot's "Physical Diagnosis" in June, 1939, we have to deplore the death of the author, so distinguished for his microscopical and serological studies of the blood, for his diagnostic teaching and for his advocacy of the employment of almoners in American hospitals.¹

Dr. Adams, who collaborated in the twelfth edition, has now produced a thirteenth, a revision and elaboration, but along the same lines, to show how the patient should be examined, to describe and interpret symptoms and signs and to discuss the more common diseases. In this last respect some may think the procedure excessive; thus heart disease is discussed from the aetiological viewpoint, and though this makes for a clearer description of the various forms, it is less helpful in the evaluation of individual signs, and a curious outcome is a tendency to revert to an old scheme in which myocardial disease is held to be due usually to atherosclerosis of the coronary vessels and to give rise to one or other of three syndromes, *angina pectoris*, coronary failure or myocardial infarction. Dr. Adams permits the name coronary "insufficiency" as a substitute for "failure", but protests strongly against "thrombosis" and "occlusion". The possibility of a hiatus hernia of the stomach, a protrusion of a portion upwards through the oesophageal opening of the diaphragm into the mediastinum, giving rise to symptoms falsely suggestive of angina, has not been overlooked.

To enable the physician to recognize the psychoneuroses and common psychoses and so to prevent suicidal or homicidal attempts, a short description of these phenomena is appended.

This book has established itself as a standard work; it is of great interest to the experienced man, though less helpful to the beginner. The publishers' part is excellently executed, though Figure 387 does not accurately conform to the description on page 785, the index is not quite complete, and a few misprints, notably in words of Greek origin, occur. Type, binding and illustrations are magnificent.

¹ "Fractures and Fracture Treatment in Practice", by Kurt Colson, M.D.; 1942. Johannesburg: Witwatersrand University Press. 8½" x 5½", pp. 157, with 157 illustrations. Price: 12s. 6d.

¹ "Cabot and Adams Physical Diagnosis"; Thirteenth Edition by F. Denette Adams, M.D.; 1942. London: Baillière, Tindall and Cox. 9½" x 6", pp. 903, with 399 figures. Price: 27s. 6d.

The Medical Journal of Australia

SATURDAY, SEPTEMBER 4, 1943.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

PREVENTIVE MEDICINE AND THE GENERAL PRACTITIONER.

THERE has been lately a good deal of loose talk and we may reasonably conclude some loose thought on the subject of preventive medicine. Some of the discussions have been associated with the use of that new-fangled term "positive health". Whether we like it or not, this expression has probably come to stay. It is a peculiar expression. If there is such a state as positive health, there must be another state that can be described as negative health. Negation of health means disease. According to the new terminology, therefore, man can be in one of three states—negative health, health and positive health. We are told that positive health is something more than ordinary health. It must then be a robust, a flamboyant state of being, what is sometimes called rude health, a conception which finds an analogy in another sphere in Nietzsche's superman. If a man is healthy, he is, according to the etymology of the word, hale or whole. There is no reason why we should not describe him as, or ask him to become, more than whole, provided that in so doing we know what we mean. From the layman's point of view it is a pity that some other term was not chosen, for to an intelligent non-medical person it must seem at least a little peculiar. As far as we are aware the term positive health was first adopted by the British Medical Association and was used last year in the draft interim report of the Medical Planning Commission. Here it was stated that one of the objects of medical service could be defined as: "To provide a system of medical service directed towards the achievement of positive health, the prevention of disease and the relief of sickness." The Parliamentary Joint Committee on Social Security in its recent report (see *THE MEDICAL JOURNAL OF AUSTRALIA*, July 17, 1943) referred to positive health in the following terms.

10. Medical care in Australia is provided under two main headings, as follows:

(1) "Positive Health", i.e. preventive medicine—which includes public health and research, and is financed very largely by Governments. Private medical men are not sufficiently associated with it at present.

(2) "Curative Medicine"—which includes (a) general medical work . . . and (b) hospital care. . . .

We should be unkind if we did not suggest that the speed with which the Parliamentary Joint Committee was compelled to draw up and present its report, was responsible for the extraordinary statement that positive health is the same as preventive medicine. Positive health, as we have shown, is a state to which it is believed members of the community can attain and preventive medicine is one of the means which, if adopted, will help them to attain it. Unfortunately the Joint Committee's statement is taken at its face value and medical practitioners may be heard exclaiming indignantly: "Positive health is more than preventive medicine." What they probably mean to say is that it takes more than the practice of preventive medicine to achieve positive health. This is one reason why it is appropriate that the relationship of the medical practitioner to preventive medicine should be discussed. Another and probably more cogent reason is to be found in the report of the Medical Survey Committee to the Parliamentary Joint Committee on Social Security. The Medical Survey Committee comprised the following persons: Dr. Alan B. Lilley, General Superintendent of the Royal Prince Alfred Hospital, Sydney (Chairman); Dr. Frank McCallum, Senior Medical Officer of the Commonwealth Department of Health; Sir Raphael Cilento, Director-General of Health and Medical Services, Queensland; Dr. Arthur E. Brown, of Colac, Victoria; Mrs. Agnes M. Walsh, Matron of the King Edward Memorial Hospital for Women, Perth; H. J. Goodes, Esquire, of the Department of the Treasury, Canberra; W. Hughes Matthew, Accountant and Assistant Inspector of the Charities Board of Victoria. This committee was appointed to gather for the Parliamentary Joint Committee on Social Security facts on which it might base future discussions with the National Health and Medical Research Council and the medical profession. According to its terms of reference the committee was to "keep in view the integration of preventive and personal health services and the subdivision of the Commonwealth, State by State, in effectively coordinated and workable health units, each to deal satisfactorily with the four main aspects for the provision of medical care to the public—(1) by general practitioners, (2) through hospitals, (3) by uniform adequate public health safeguards and protective measures, (4) by specialists, and by ancillary services, such as laboratory and radiological facilities and other work done by technicians". The committee covered a great deal of ground during the 84 days of its activities—it travelled 14,000 miles, visiting every State except the Northern Territory; it inspected 370 hospitals and interviewed 105 doctors engaged in country practice. Its report is a lengthy document that will be printed in due course. In one section of the report dealing with public health work the committee states that "throughout the Commonwealth and in all States the amount of public health work done by general practitioners is minimal". In another place we read: "In no State was there any evidence that the medical profession as a whole was directly and actively interested in the public health of the area; rather it

appeared to be both untrained in this aspect of medical care, and indifferent to it." This statement was amplified as follows:

The situation has not, in fact, altered since 1925, when Dr. F. S. Hone and Dr. (now Sir Henry) Newland stated that experience had shown "that the medical practitioner who is officer of health, if he endeavours to carry out his health duties seriously, is at a disadvantage in his practice compared with his colleagues who are practising only; on the other hand, as health officer his salary is quite inadequate for any serious health work; he often has to fight against local vested interests and progress in health measures consequently is lacking"; and quoted, with approval, the statement of Dr. E. S. Morris (then of Tasmania), now Director-General of Public Health in New South Wales, as follows: "The local officer of health, not being vested with essential responsibility and receiving a mere pittance in the nature of retaining fee, cannot afford to give his attention to health administration which will often bring him into conflict with his prospective patients. His function in the community is, therefore, primarily curative when it should be preventive and until the medical officer of health, whether as general practitioner or full-time officer, is retained as an active entity of public health administration, responsible to the controlling body of the State, we must fall short of the ideal."

It is not quite clear what the Medical Survey Committee means by its statements. Taken literally the words imply that medical practitioners are not directly and actively interested, that is, take no share in the work of public health (departmental) medical officers. On the other hand, looked at in conjunction with the statement of the Parliamentary Joint Committee on Social Security, which has been quoted, they may be taken to have a deeper implication. If the statements of the Medical Survey Committee are to be used by the Parliamentary Joint Committee in future discussions it is very desirable that the relationship of the general practitioner to preventive medicine shall be made clear for the benefit of all concerned.

The question of doctors and the public health is discussed in an admirable way by the late Sir Henry B. Brackenbury in a book entitled "Patient and Doctor", first published in England in 1935. Brackenbury points out that the modern intrusions of the State into the realm of medicine are inevitable. He adds that the greater concern of the community not only with its own collective health, but also with the personal health of all the individuals who compose it, is not a matter to grumble about, but rather to be welcomed. "It offers not merely to the organized medical profession, but to each several doctor, opportunities, such as he has never enjoyed before. There is the opportunity of influencing or moulding the methods which the State may choose for implementing its newly recognized responsibilities; and there is the opportunity, with this newly available help and these fresh resources, to improve health conditions among the clientele of his patients." Brackenbury insists that the outlook of the private practitioner—the family doctor more particularly—is not, and ought not to be, the same as that of the public health medical officer appointed to his post primarily for communal purposes and interests. "It should be complementary rather than identical." Discussing the matter further, Brackenbury writes that the private practitioner and the public health medical officer both have to do in some degree with the community, and both in some degree with the individual. "Each is concerned, to some extent, with the curative aspect of medicine, and each, to some extent, with its preventive aspect; and each is concerned also with the provision or the utilization of the means and conditions of perfecting bodily and mental health." He

sums up in one sentence: "The public health medical officer is always dealing with the individual for the sake of the community; the general medical practitioner is always affecting and helping the community through the individual." This may be expressed in another way by stating that the general practitioner acts on an individual or family basis and the public health medical officer acts on a community basis. There is the additional fact that the public health officer has in virtue of his office a backing of authority which the general practitioner does not possess.

We cannot imagine that anyone would seriously question the truth of Brackenbury's views. The first conclusion to be drawn from them is that the general practitioner cannot function as a public health officer. He would not be able so to function under any system as long as he remained a practitioner treating individual members of the community who were ill. Whether the general practitioners of the Commonwealth by and large grasp the opportunities mentioned by Brackenbury is another matter, and opinions may differ in regard to it. This question may be considered from two points of view, in accordance with the opportunities stated by Brackenbury. Taking the second first—whether the practitioner makes the most of his opportunities of promoting the health of his individual patients and of preventing them from becoming ill—we hold that this is done much more generally than is commonly supposed. It is, of course, impossible to say how many practitioners do and how many do not make the most of their opportunities. In support of our impression it may be pointed out that treatment of many diseases necessarily involves the taking of certain preventive measures. Further, we have heard no complaints from those in authority that doctors refuse to cooperate in public health work. In any case it is fatally easy to declare that medical practitioners are not interested in the prevention of disease; it is the kind of statement that is repeated by one writer after another, with no fresh evidence to support the repetition. The fact that practitioners are paid money for attendance on sick persons and for the direction of curative measures, would appear to make interest in prevention of disease less real. But the practitioner does receive fees for preventive work pure and simple, though not in the same measure as for curative work. Brackenbury states that the practitioner in his everyday work renders constant service which has the most profound reactions on the state of the public health. He insists that the magnitude and extent of the work which every family doctor is doing in respect of the preventive aspect of medicine are usually unrealized or grossly under-estimated by the public and "unfortunately also" by most members of local public health authorities and other departmental bodies. The best evidence of the interest of the private practitioner in preventive medicine is provided by consideration of this subject from the second point of view, that of organized medicine. Medical societies are composed of individuals and act according to the ideas of those individuals. Anyone who has taken an active part in the conduct of British Medical Association affairs or of those of other medical societies cannot be ignorant of the great amount of effort expended and work actually done by these bodies in the sphere of preventive medicine. It would be no exaggeration to say that no Australian Branch of the British Medical Association holds a council meeting at which some measure directed to the public health or the prevention of disease does not come

up for discussion. The Australasian Medical Congress, since the first session held in Melbourne in 1923 with the idea of prevention of disease as the dominant note, have all, in plenary or other sessions, dealt with some aspect of preventive medicine. The prevention of disease is inseparable from many of the subjects discussed at Branch meetings and occasionally matters are included that belong to that wider conception of preventive medicine, medical sociology.

We have given some reasons for the view that medical practitioners are not unmindful of preventive medicine, that preventive medicine is part of everyday practice and that many doctors go further than this and pay greater attention to it. If there has been a failure in the prevention of disease, it is right to ask why the failure has occurred. The work of the general practitioner in the matter of prevention is complementary to that of the public health medical officer. The complementary work cannot be done until and unless the basis is laid. It is a fact that the prevention of disease is most effective where the health department with its medical officers is alive and efficient. The health department and the medical profession must act together; neither can be really effective without the other; but of the two the department has the greater responsibility because it can act on a wide basis and enjoys authority. Beyond this there is another source of failure—a source often forgotten. The late George Adlington Syme, in his President's Address to the 1923 or "prevention congress", laid the chief blame for failure in the prevention of disease at the door of the public—the public individually and collectively, he held, was mostly at fault. The members of the public could not be persuaded to adopt health measures, even when they were most obvious. There is much truth in this, but it is to be hoped that we have advanced a little in this regard since 1923.

The final word must be for the general practitioner. He knows better than anyone that there is no line of demarcation between preventive and curative medicine. He can emphasize the preventive aspect on every available opportunity; and he should remember that it is the careless practitioner who brings discredit on the whole body of practitioners. The general practitioner also knows full well that he alone cannot do what is needed—the department must use its authority to bring eventual success. The practitioner in the past has been responsible for the introduction of many health measures; he should still look for new weapons and for new ways of using old ones.

Current Comment.

PSYCHOTIC MANIFESTATIONS OF NICOTINIC ACID DEFICIENCY.

In nicotinic acid deficiency as manifested by pellagra, psychical disturbances are prominent symptoms. Indeed, evidence suggests that damage to nervous tissue is the prime effect of nicotinic acid deficiency. The importance of nicotinic acid in the cure of various psychoses has been discussed recently by V. P. Sydenstricker.¹ The matter is of sufficient importance to warrant its mention here; for there is too great a tendency to shirk as hopeless the task of attending psychotic persons. It is not a hopeless task. For example, in acute disease rapid recovery from

delirium or the elimination of a toxin is a common observation. Perhaps many other mental disturbances are caused either by a toxin or by deprivation of some essential substance.

Sydenstricker presents the hypothesis that "chronic partial deficiency" of a vitamin "produces functional and anatomical changes of quite a different order from those caused by rapid or acute, and perhaps total, depletion of vitamin reserves". Deficiency of nicotinic acid over many months or years "produces functional or biochemical disturbances which are relatively mild, but in the course of time lead to anatomical changes which may be irreversible". Sudden, complete or almost complete deprivation, on the other hand, produces "severe, even fatal functional disturbances, often with no gross anatomical lesions". The psychotic manifestations of pellagra in the early stages are essentially "neurotic". Their significance is therefore apt to be unrecognized. In the course of time the characteristic glossitis and dermatitis appear, and after several relapses, the mild psychoses are replaced by disorientation, confusion, hysteria and sometimes maniacal outbursts. If nicotinic acid is administered early enough, the patient recovers. If the administration of nicotinic acid is long delayed, some improvement in behaviour may be achieved; but cure is impossible, presumably because of permanent changes in the neurones. But Sydenstricker points out that there are other and more important psychoses due to nicotinic acid deficiency. These are the result of acute deprivation of the vitamin. Patients of one particular group are often seen in hospital, after surgical operation or after delivery. Some of this group are alcoholic; the great majority give no evidence of serious dietary inadequacy; but some of them have been subjected to dietary restriction because of some intestinal disorder and others have been given glucose for some days as the main or only source of nourishment. Sydenstricker suggests that these people have really been taking an inadequate diet, and when they are suddenly deprived of their small vitamin intake they break down. "The onset of delirium, hallucinations, or mania is abrupt, or after a very short period of confusion." Physical signs of deficiency disease are absent. The response to the administration of nicotinic acid is rapid. Another group consists of patients who are old and undernourished and are admitted to hospital in a condition of profound stupor or of stupor alternating with delirium. Obvious signs of avitaminosis are lacking. The diagnosis is usually uræmia or cerebral thrombosis. In a few days the patient dies of a terminal pneumonia unless nicotinic acid is administered. Sydenstricker states that at first nicotinic acid was given empirically to these patients. The results of the specific therapy are remarkably good.

In 1940, Jolliffe "reported an encephalopathic syndrome characterized by clouding of consciousness, cogwheel rigidities, and uncontrollable grasping and sucking reflexes". About half of his patients bore evidence of pellagra; all were alcoholic. The mortality rate was 89.4%, but was reduced to 13.6% on the exhibition of nicotinic acid.

The only certain and convenient method of diagnosis is the therapeutic test—the administration of nicotinic acid. In the differential diagnosis, tumours of the frontal lobes, cerebral metastases, syphilis, vascular disease of the brain, abscess of the brain, subdural hæmatoma, and bromide intoxication, are some of the conditions that must be considered.

In treatment, a full diet should be given as soon as possible. In the early days it may be necessary to give milk, eggs, gruels and vegetable *purées* by stomach tube. "Marmite" or other yeast extracts may be added. During the first two days 100 milligrammes of nicotinic acid or 30 milligrammes of nicotinic acid amide are given every hour for ten hours of the day. Intramuscular or intravenous administration may be necessary. In forty-eight hours great improvement results, and the dose may be reduced to 500 milligrammes of nicotinic acid or 150 milligrammes of nicotinic acid amide a day. Later, the oral administration of 25 milligrammes of nicotinic acid three times a day should be adequate.

¹Proceedings of the Royal Society of Medicine, February, 1943.

Abstracts from Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

Air Pollution and Respiratory Disease.

CLARENCE A. MILLS (*American Journal of Hygiene*, March, 1943) discusses air pollution and respiratory diseases. He uses data obtained through the State services of Ohio in relation to the cities of Pittsburgh and Cincinnati. The soot fall figures along the river valleys were found to be the highest recorded in the cities, and these areas coincided with the crowding of industrial buildings and factories needing water transport for their products. Winter smoke palls hung heaviest over these areas, and the combination of smoke and fog, that is, moist air containing a high concentration of carbon particles succinctly described by the author as "smog", also coincided with the pneumonia death rate to a startling degree of accuracy. Further, this death rate was amongst males, and this again agreed with the concentration of male labour in these areas, and the direct relation was further demonstrated by the fact that in rural areas of the same State the pneumonia rate was no greater in men than in women, while in the industrial areas the lowest lying areas had the highest death rate, indicating that the hill tops escaped the concentration of polluting matter. The question of cancerigenic substances occurring in the "smog" is also discussed by the author, and he suggests that a comparatively small amount of inhaled particles actually reach the pulmonary alveoli, and therefore cancer of the upper respiratory tract should be considered in searching for evidence on this point. He states that cancer of the lung and air passages showed a far greater incidence in these areas of heavy air pollution than in adjacent higher and cleaner districts. He points out that he is discussing effects of coal combustion products *en masse*, and that no attempt has been made to differentiate between harmful and innocent elements. The author believes that air purification, just as water purification, would become an economic necessity only when the true effects of its omission have been demonstrated to governing bodies. He suggests either sulphur purification of coal, or methods to ensure its complete combustion, effective trapping of ash from industrial chimneys, and greater use of diesel or of electric power for railroad transport.

Range of Anopheles Dispersion.

DON E. EYLES AND LINDSAY K. BISHOP (*American Journal of Hygiene*, May, 1943) designed an experiment on the range of dispersion of *Anopheles quadrimaculatus*. The mosquitoes were collected by means of an electric upholstery cleaner in a series of barns spaced along a river bank, taken to a release point, and after being gently sprayed with a fine "bronzing powder", so that they might subsequently be recognized, were set free. Collections were made daily for one week in the

same barns and the catch was carefully examined for marked specimens. On the seventh day after release, seven marked mosquitoes were caught two miles from the release point. The authors noted that the weather conditions were not abnormal, and accept the result as evidence that the female of this species of mosquito can fly at least two miles in a comparatively short space of time.

Virus Vaccination and Nasal Secretions.

T. FRANCIS, JUNIOR, HAROLD E. PEARSON, EUGENE R. SULLIVAN AND PHIL M. BROWN (*American Journal of Hygiene*, May, 1943) have studied the effect of subcutaneous vaccination with influenza virus upon the inactivating capacity of nasal secretions. A group of 30 subjects was injected with active virus. Blood and nasal secretion were collected before injection and two weeks later, and the specimens were tested in one case for antibody titre, and in the other for virus inactivating capacity. Twenty-three showed considerable increase in serum antibody, and also in virus inactivating capacity of the nasal secretions. Seven subjects failed to show the fourfold rise in serum antibody demanded as evidence of satisfactory response to vaccination. Fourteen subjects were vaccinated with inactivated virus, and ten showed similar but smaller rises compared with the group given active virus, and here again a small number did not respond. A third group was treated with a different type of inactivated virus, and these behaved similarly, with a still smaller average rise in each test. There was always a relation between the serum antibody rise and the rise in ability of the nasal secretions to inactivate virus, and the authors state that there is no evidence to suggest that virus preparations which induce immunity to infection do not also induce the formation of antibodies. In each experimental group there was a percentage which did not respond effectively, and comparisons are made with the fully immune ferret which on further infection produces no further antibodies, though the level of antibodies present before vaccination may not suggest full immunity.

Bacteriophage in Treatment.

WALTER E. WARD (*The Journal of Infectious Diseases*, March-April, 1943) tested the protective action of VI bacteriophage in *Eberthella typhi* infections in the mouse. After demonstrating blood stream infections one hour after intraperitoneal inoculation in the test animals, the protective action of the phage was shown by injecting a single dose of 0.05 millilitre of specific phage. The test group of mice showed a mortality of 6%, while the untreated controls showed a mortality of 93%. Experiments were planned to show that the specific phage was the protective agent, neither supernatant fluid from broth cultures of the bacilli nor phages specific for other types of bacilli inducing cure. A series of animals were given identical doses of bacilli and diluted phage in falling concentrations for treatment. A critical dilution was found beyond which the protective effect disappeared. With treated mice and surviving control mice, cultures were made to see if the bacilli persisted in the gall-bladder

and spleen up to 42 to 58 days. In the phage-treated mice no isolations were obtained, but of the surviving control mice only 25% failed to show typhoid bacilli. The author believes that his experiments suggest that the phage particle multiplied *in vivo*, and while large doses of phage comparable to those used for mice would not be practicable in humans, the titration of diluted phage showed that a smaller concentration would be effective. Some treated mice carried degraded forms of the bacilli with which they had been infected for twenty-eight days.

Bacterial Endocarditis due to Micrococci.

JOHN B. PENFOLD (*The Journal of Pathology and Bacteriology*, April, 1943) states that very occasionally subacute, and more rarely acute, endocarditis is caused by an organism which has unusual characters and which it may be impossible to place in any known category. He reports two cases, one acute and one subacute, due to such organisms. The organisms were nearest in type to *Staphylococcus albus*, but differed from it in certain respects. In the first case (acute) the organism did not grow well on ordinary media, but did so on continued subculture. Unusual characters for *Staphylococcus albus* were the arrangement of the cocci, the character of the original colonies, the presence of a deposit in liquid media and hemolysis on blood agar. The organism in the second case was more in accord with the accepted definition of *Staphylococcus albus*, but mannitol was fermented by it and lactose was not. The author states that the classification of staphylococci and micrococci is still tentative and unsatisfactory. Until a definite and distinctive classification can be generally adopted the term *Staphylococcus albus* should be reserved for the organism which he defines. The term *Staphylococcus aureus* should be dropped; for certain types of organism so named at present the term *Staphylococcus pyogenes* could be used.

HYGIENE.

Exotoxin of *Corynebacterium Diphtheriae*.

MARTIN FROBISHER AND EVELYN A. MAUS (*American Journal of Hygiene*, March, 1943) record their failure to demonstrate synergism between diphtheria toxin and extracts of *Corynebacterium diphtheriae gravis*. The work was undertaken to test the theories of O'Meara that an extractable substance, obtained by saline washing from Loeffler slope cultures of *gravis* strains of diphtheria bacilli, aided the diffusion of toxin in guinea-pigs, was antigenic, and not neutralized by the antibodies composing the larger part of commercial antitoxin. The technique followed in preparing the extracts was that described by O'Meara and the toxin used was a standard preparation whose minimum lethal dose was known, and the guinea-pigs were of standard weight and age. In the first series of experiments several saline extracts were prepared from strains isolated from patients suffering from malignant diphtheria, different temperatures and times being used. The saline extracts injected alone did

not produce any lesions in the guinea-pigs, while extract combined with toxin produced lesions comparable to those in the control animals injected with toxin alone. Other animals were injected with extracts prepared from *mitis* strains of the organism and gave similar results, as did toxins from *mitis* strains, while extracts from avirulent *gravis* and *mitis* strains were also ineffective. After this failure, it was decided to increase the dose of the extract in relation to the amount of toxin by five times, and again no action due to the addition of the saline extract could be observed. Inoculation of the mixture intradermally instead of subcutaneously failed to produce evidence of its activity being increased by the addition of saline extract. Only in one series of experiments was the lesion produced in the guinea-pig slightly larger with extract than with toxin alone, and this mixture had been held at body temperature before injection, but the *mitis* strain showed a similar effect. The experiments failed to reveal the existence of any substance extractable with saline solution from any of the strains of diphtheria bacilli tested, which enhances by synergistic effect or similar action the effects of the ordinary exotoxin of *Corynebacterium diphtheriae*.

Public Health Problems Concerned in the Disposal of Garbage by Feeding it to Swine.

W. H. WRIGHT (*American Journal of Public Health and the Nation's Health*, March, 1943), discussing public health problems concerned in the disposal of garbage by feeding it to swine, states that savings in cost favour this method of disposal. In war it conserves food, but the practice perpetuates trichinosis. In over 5,000 human diaphragms 15.9% were found to be infected. Of 12,000 hogs fed on raw garbage, 6.2% were infected; of those fed on grain, 0.6% were infected. Over one and a quarter million hogs are fed on uncooked garbage. The rat seems to play a minor role. Though over one-half of the municipal garbage is fed to swine, only 6% of authorities cooked it beforehand. Home economics, refrigeration and increased use of canned food have cut down the fattening value of garbage by about one-half in the past ten years. The pork produced is inferior in quality to that of the grain fed hogs. Hog cholera is a scourge of garbage fed hogs, and Canada therefore insists on the cooking of garbage. Vesicular exanthema is another disease of the garbage-fed. Cooking of garbage in spite of criticisms does not appear to reduce its nutritional value and some think the cooked product superior. The outlay for equipment is the real stumbling block. The cost should not exceed two dollars a ton. Hog feeding plants must be proofed against rats.

Observations on the Typhoid Carrier State.

W. R. AMES AND M. ROBINS (*American Journal of Public Health and the Nation's Health*, March, 1943) report that in New York State from 1930 to 1939, 3,750 cases of typhoid fever were reported, and 453 of the patients died (11.5%). Two "negative" faecal reports were required for release from supervision. Full details are available for 3,130 patients of whom 2.9% became

chronic carriers. Though nearly 50% of patients were under twenty years of age, only 0.8% became carriers; the proportion rose to a maximum in the 50 to 59 age group where 10.1% became carriers. Females made up 44% of the patients, but 59% of the carriers, the rate of development at all ages being almost twice as high as in males. The 40 to 49 age group supplies 16.4% of female patients, but only 3.5% of male chronic carriers. Patients over thirty years of age became chronic carriers nine times as frequently as those under thirty. The rate of bacteriological cure varied inversely with age.

A Bacteriological Study of the Streptococci Isolated from Raw Retail Milk.

E. H. BEAHM (*American Journal of Hygiene*, September, 1942) reports a bacteriological study of raw milk. Samples of raw milk as distributed from forty-eight Omaha dairies were plated and streptococcus colonies were picked out and typed—haemolytic types serologically and the non-haemolytic types biochemically. Seven dairies gave β -haemolytic types, 18 non-haemolytic and 21 both, only two being free. Lancefield's technique was used in typing. The milk, though produced under most careful sanitary control, contained haemolytic streptococci of human origin.

State Health Programmes.

AFTER an historical summary of the progress during the four periods in the United States of America up to 1863, to 1913, to 1934, and since 1934, H. S. MUSTARD (*American Journal of Public Health and the Nation's Health*, September, 1942) states that three needs stand out clearly. The first is that a federal subsidy should be given only if the State brings in an over-all plan making local health service effective; the second is that mandatory State laws should make every unit of local government pay for this primary need; and the third is that State laws should make combinations of local units of government to give a complete and economic service. Similarly a closing up of the ranks in the federal sphere of administration is also needed. Effective local health service should be no longer a choice, for it is an essential. It is not too early to lay careful plans for the early post-war period.

Encephalitis in Man following Vaccination with 17D Yellow Fever Virus.

J. P. FOX, E. H. LENNETTE, C. MANSON AND J. R. SOUZA AGUIAR (*American Journal of Hygiene*, September, 1942) state that vaccination in yellow fever has been carried out with a neurotropic strain. American and English workers have therefore used immune serum with it. French and other workers have injected this living virus without serum and some severe reactions were noted. The 17D strain by repeated passage in tissue culture was still further attenuated. When this was used, only 69 out of 38,000 persons vaccinated were a day off work. Since then over two million have been vaccinated in America and England. In July, 1941, severe reactions began again to appear and were first noted in the Guanaes area. Of 55,000 persons vaccinated, 273 had severe

reactions, 199 involving the central nervous system. One fatality is known. Symptoms arose usually in 6 to 8 days up to 17 in mild cases and in severe cases in 9 to 11 days up to 20, averaging 9 and 12 days respectively. Severe cases were more often seen in children. Further, only ten similar cases occurred in the unvaccinated. Vaccination therefore and a variation in the substrain used seem responsible.

Observations on Mental Hygiene.

W. F. ROTH, W. C. WILLIAMS AND F. H. LUTON (*American Journal of Public Health and the Nation's Health*, September, 1942) state that Williamson County, Tennessee, was chosen for an estimate by means of a psychiatric unit of mental illness and maladjustment in a county community. In 1938 at least 1,721 persons or nearly 7% were found to need psychiatric help. Over one-half were classed as "active" (3.7%), and 4.5% were backward types. At least 604 (2.4%) required urgent attention. Where closer study was carried out the case rates were twice as high. A programme is set out of demonstration, training of personnel, education of the professional groups and the community, all "tied up" to the local health department. This ensures medical supervision and gives links with social agencies, schools and practising physicians.

Anæmia as a Cause of Death in Bird Malaria.

CLAIRE M. HILL (*American Journal of Hygiene*, September, 1942) states that pigeons parasitized by *Plasmodium relictum* may die and in fatal cases severe anæmia was always noted. Of twelve infected birds, eight died. In those who survived, the lowest red cell count was 1,800,000 per cubic millimetre, with 26,000 of the cells parasitized. In those who died it dropped to 1,300,000 with only 576,000 cells without parasites. As infection progressed young cells became more frequent and more often contained mature parasites. The anæmia resulting was considered the cause of death.

Poliomyelitis Virus in Flies.

F. B. BAY AND R. W. GLASBE (*American Journal of Hygiene*, May, 1943) have studied the persistence of poliomyelitis virus in flies. Experiments were undertaken to furnish a biological background for the further study of the transmission of the virus by flies. Several varieties of flies were used, and these were bred in the laboratory under controlled conditions to obviate the possibility of natural infection. Theller's virus and a mouse adapted strain of human virus were fed to groups of flies, and at intervals after feeding a number were ground, emulsified and inoculated intracerebrally into mice. Theller's virus survived in the house fly up to twelve days after the infective feed. The human strain of virus gave only two recoveries of virus in all attempts, and those two days after the infective feed. No evidence was obtained that the virus multiplied in the fly, and no experiments were successful when the infective material was fed to the larval stage of the fly. The author concludes that more work is needed on this problem in relation to human poliomyelitis.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Western Australian Branch of the British Medical Association was held at the Perth Hospital on November 18, 1942, Dr. JOHN LOVE, the President, in the chair.

Low Back Pain.

Dr. J. H. YOUNG read a paper entitled "Low Back Pain" (see page 181).

Dr. R. D. MCKELLAR HALL thanked Dr. Young for his interesting paper and especially for the excellent motion picture film showing his method of examining the back. Dr. Hall said that he did not think that it was worth while wasting time in dealing with a number of signs known by the distinguished name of the originator, since every doctor had his own particular method of examining the back, and so long as the examination was comprehensive it was not necessary to endeavour to elicit all these special signs except in certain obscure cases. Two essentials were (i) to have a clear idea of how to examine a back, and (ii) to have a clear idea of what was being looked for, so that the signs elicited might be interpreted with reasonable accuracy. Without a clear idea of the possible lesions responsible for back pain, an intelligent interpretation of signs was out of the question. It was difficult enough, even with a clear idea of the possibilities which were now listed by the experts in clear-cut categories with the appropriate label; reading about them made the matter look like a kindergarten problem. A recent book listed the facet syndrome, the sacro-iliac syndrome, the lumbosacral syndrome and the discogenic syndrome, which included retropulsion, antepulsion, prolapse, lateral shift, calcification, dehydration, infiltration and expansion. It was easy to see how simple the matter really was.

Dr. McKellar Hall then uttered a plea for a comprehensive examination of each patient at the first consultation, or at any rate if a "spot" diagnosis had been risked at the first examination, for a full examination within a week or ten days if the patient was not recovering. He said that he realized that it was extremely difficult for a general practitioner to spend three-quarters of an hour or an hour examining one patient during a busy surgery session, but he considered that it was essential, because a full examination must be carried out early. He said that most patients he saw himself were involved in disputes which had been dragging along for weeks or months, and it appeared that in consequence they had never been thoroughly examined or adequately treated.

Dr. Hall went on to say that Dr. Young had not mentioned the psychological factor. This he found was of great importance, for the working man rapidly developed a fear complex that he would not be able to work again. It was that psychological complication which led to exaggeration of symptoms and signs and failure to make any progress towards recovery in many cases. Dr. Hall thought that a useful purpose might be served if he gave a few "leaders" which had proved of great help in practice. (i) Stiffness of the back or a joint present in the morning and easing off after mild exercise pointed to arthritis, periarthritis or fibrositis. (ii) If the stiffness was absent in the morning, but came on during the day, postural strain or adhesions were suggested. (iii) Traumatic and inflammatory conditions were relieved by rest. (iv) Pain unaffected by changes of position suggested a malignant growth, lesions of the disk or the *ligamenta subflava*, or intraspinal conditions. (v) Pain aggravated or not relieved by immobilization suggested neoplasm. (vi) The blood sedimentation rate was of value in discriminating between inflammatory or destructive lesions and mechanical lesions.

With regard to treatment, Dr. Hall suggested that a plan should be formulated after the first examination, based on the diagnosis then made. If progress was not satisfactory in a week or ten days, the patient should be thoroughly reexamined and possibly the diagnosis altered. Immense harm was done each week by greeting the patient, for whom rest and liniment had been prescribed, by such phrases as: "How are you getting on? No better? Well, carry on for another week." An adequate examination should be made to find out why his condition was not improving. Continued masterly inactivity led to the psychological state mentioned earlier in the case of most honest working men with a genuine back disability. The general principles of treatment of back conditions were the

same as for similar tissues in other parts of the body. They comprised a selection, based on which tissue was mainly involved, of rest, heat, massage and mobilization or immobilization, exercises, and use, with or without support. In the main a short period of rest with the application of heat and massage followed by graduated exercise and graduated use would effect a cure in the vast majority of cases. Manipulation was seldom necessary in the early stages, except when there was a subluxation, usually of a sacro-iliac joint; then it was essential.

When the history and signs suggested adhesions—and this combination was frequent in the "rest, liniment, and carry on" group—a properly performed manipulation would act like magic; but Dr. Hall stressed the words "properly performed". Manipulation of a back did not consist in using the greatest available strength in all directions, but in a skilfully applied manoeuvre or series of manoeuvres calculated to perform the desired movements in the proper direction to rupture the adhesions with minimal trauma to surrounding joints and structures. It might mean only one single movement. One patient referred to Dr. Hall had had one of those "strong man" manipulations a week before being examined by him; he had to be kept in bed, rested, massaged and gradually exercised before his generalized pain had subsided sufficiently to permit of a proper examination.

Support was indicated when postural disability was present, and for healing ligaments or muscles; in practically all cases exercises must be prescribed in order to prevent the loss of tone which would ensue if support alone was advised. Dr. Hall finally said that in his opinion immobilization in plaster of Paris, mostly prescribed for lack of a clear idea of the pathology of the condition, was seldom indicated. Few pathological conditions required that the patient should be immobilized in plaster of Paris, and the indications in those cases were clear and unmistakable. In doubtful cases, plaster should not be used.

Dr. M. A. RADCLIFFE-TAYLOR congratulated Dr. Young on his paper and the excellent moving pictures shown. She regarded a diagnosis of malingering as being often the last refuge of the diagnostically destitute.

Dr. Love, from the chair, congratulated Dr. Young on his paper. Dr. Love regarded it as being of extreme value to the general practitioner, who frequently saw these patients soon after their accident; the specialist, on the other hand, dealt with the more chronic cases, in which either treatment had been unsuccessful or an inaccurate diagnosis had been made. Dr. Love deplored the absence of interest disclosed by the relatively poor attendance of members; members who were equally busy managed to make time to prepare papers of value to the medical profession, and it was disheartening to have to deliver them before a mere handful of people.

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Paediatric Society was held on June 9, 1943, at the Children's Hospital, Carlton, Melbourne, Dr. WILFRED FORSTER, the President, in the chair.

Osteochondritis Dissecans of Femur and Tibia.

Dr. W. FORSTER showed a boy, aged six years, who had a swelling of the right knee following a simple injury. This swelling had persisted for several weeks, and was accompanied by a clicking sensation in the joint, but no pain. The X-ray findings were unexpected. The left knee was taken as a control for comparison with the affected side. On the left side, about which no complaint whatever was made, obvious *osteochondritis dissecans* was revealed in the left medial femoral condyle, which was the usual site for *osteochondritis dissecans*. In the right knee, an area of rarefaction was present in the tibial medial condyle; this was almost certainly of the same nature, even though it was present in a most unusual site. In addition, the appearances in the film were suggestive of slight rarefactive changes subchondrally in the posterior aspect of the right femoral condyle. Dr. Forster said that an additional reason for showing the patient was that he presented an excellent example of the early changes in *osteochondritis dissecans*. Very little change had occurred during the eight months that the child had been under observation. However, the

latest films showed that the "joint mouse" below the left medial condyle was a little larger and better defined.

Dr. Forster said that often difficulty was experienced in diagnosing the state from early synovial tuberculosis. A movable semilunar cartilage also closely simulated the condition. He had not previously seen a description of the condition occurring in the upper part of the tibia.

Dr. ERIC PRICE said that the lesion in the head of the tibia was probably *osteochondritis dissecans*; it was peculiar, in that it had no pseudo-sequestrum within it. The site also was atypical, for the lesion usually occurred in the lower end of the femur. A similar condition had been described in the lower end of the humerus and in the talus. Dr. PRICE had had a similar experience of radiologically examining the sound knee and finding bilateral symmetrical lesions. He had elected to treat the diseased knee in plaster of Paris, and the condition cleared up on both sides. Dr. PRICE thought that this should be borne in mind. In adults the piece of cartilage invariably became loose; it was treated as a foreign body and removed.

Dr. H. D. STEPHENS suggested that Dr. Forster should show the patient again six months later.

Dr. ELIZABETH MCCOMAS remembered two analogous cases. One patient was under the care of Dr. Watson Jones, and complained of disability in one elbow; when X-ray films were taken, the other elbow being included for comparison, a bilateral lesion was discovered in the heads of both radii. The other patient was a boy, aged sixteen years; both knees were involved.

Dr. Forster, in reply, said that one had to admit that the lesion in the femur was certainly *osteochondritis dissecans*. He felt diffident about attaching another diagnosis to the tibial lesion. He could recall three similar cases. In one of these there was a strong family history of tuberculosis, and a reaction had been produced by the Mantoux test. The child was sent to the Frankston division of the hospital with the diagnosis of tuberculous knee joint. After six months, X-ray examination revealed *osteochondritis dissecans*. The joint was opened, and though the X-ray film had shown a very tiny "joint mouse", quite a large piece of cartilage was removed. Relief followed the operation. Dr. Forster thought that the femoral piece in the case under discussion would separate and perhaps produce symptoms of locking in the knee joint. He proposed to show the patient again in five or six months' time.

Surgical Rickets.

Dr. ERIC PRICE said that his series of patients was shown for a number of reasons. (i) During the past year or more there had been a great increase in the attendance at the out-patient department of patients with the lesion commonly referred to as "O.C.T. (outward curved tibia)"; the patients were aged between one and two years. These children seldom presented the changes of acute rickets, or those usually accepted as indicating healed rickets. Dr. PRICE regarded the deformity as a continuation and accentuation of the normal infantile condition, and likely to disappear spontaneously. However, in some apparently identical cases active rickets had been found, and the aetiology of the condition seemed open to question. (ii) During the same period a larger number than usual of cases of obvious rickets had been encountered, including some among older patients. The usual factors of diet, race and familial predisposition could be found; but if all these children were to be regarded as rachitic, and if this increase was a general experience, it might be that wartime difficulties were beginning to show an effect. (iii) The importance of internal rotation should be stressed. This was the chief cause of the flat foot and "in-toeing", and should be corrected either by osteoclasis or osteotomy. (iv) There were some technical difficulties to be overcome in order that rotation osteotomy might give the best results; in particular, (a) the fibula might require division in some cases to obviate any recoil, and (b) some form of skeletal fixation seemed desirable. When the knees were extended, there was no real control of the proximal fragment, and when the knees were flexed it became difficult to judge the degree of torsion imparted.

Dr. PRICE then showed a female patient, aged six years, who had been admitted to hospital under the care of Dr. W. W. McLaren, on account of gross rachitic deformity of the legs, which had been noticed at the age of two years, and which had increased. It was stated that the elder sister showed a tendency to rickets, but two younger children were normal. Examination revealed gross deformity in the legs—namely, forward bowing of the lower third of the tibia with internal rotation so that the feet were flat, and outward bowing of the femora. The forearms were slightly

bowed. A "rickety rosary" and squareness of the head were present. X-ray examination revealed the changes of active rickets in the knee, ankle and wrist metaphyses. No renal abnormality was discovered. The urine was clear, and excretion of "Uroselectan" was normal. The serum calcium content was 11.5 milligrammes per 100 cubic centimetres, and the plasma phosphorus content was 3.6 milligrammes per 100 cubic centimetres. After five weeks' medical treatment, including the administration of half a teaspoonful of cod liver oil three times a day, cuneiform osteotomy was performed on the tibia, and one year later, in January, 1943, the femoral bowing was also treated by cuneiform osteotomy. At that time X-ray examination showed that the rickets had healed. Dr. PRICE said that a double spica had been removed six weeks prior to the meeting, and that the patient had been slowly getting onto her feet, the knees being stiff. Residual internal torsion of the tibia was present; this would necessitate further osteotomy.

Dr. PRICE's second patient had been first examined on October 5, 1942; he had been noted to have very flat feet from infancy. The mother brought him to the hospital because he walked with his knees turned out. At the time of the examination he was aged four years and four months, and was bright but undersized. The femora were bowed in a forward direction and also were outwardly curved. Examination of the tibiae revealed 30° of internal torsion; this condition was held to be the cause of the extreme plano-valgus deformity of his feet, as well as the reason why he walked with his knees turned out. He was noted to have blue sclerotics, which was a family defect on the father's side, though none of the family was subject to fracture except his grandmother. Renal efficiency tests had not been carried out, but no renal defect had been suspected. X-ray examination on October 6 revealed no evidence of recent or healed rickets in the metaphyses. On May 25, 1943, operation was undertaken in the form of an osteotomy to correct the 30° of internal torsion in the tibia. An attempt was made to fix this by sliding a key of bone across the resulting gap; but this was not practicable, as the bone fell through into the medullary cavity. Fixation was then attempted by flexion of the knees to 90° and the application of a plaster cast. Dr. PRICE said it appeared that the recoil of the undivided fibula was of some importance in these rotation osteotomies, as pressure marks developed on the inner side of the great toes. This had necessitated reapplication of a plaster cast, and the extended position had been used.

The third patient shown by Dr. PRICE was first examined on May 18, 1943; he had a severe degree of outward curving and inward turning of the tibiae. The child had been breast fed for three months, and then appeared to have lived principally on a type of whole wheat biscuits. X-ray films were spoiled because of movement.

Dr. PRICE's fourth patient, a girl, was first examined on August 5, 1941, at the age of one year and five months because of a severe degree of outward curving and inward turning of the tibiae. The femora, right forearm, head and ribs all showed evidence of rickets, and X-ray examination revealed typical changes. The child was Australian born of Greek parentage, and had been breast fed for fourteen months, with the addition of some cow's milk, biscuits and cornflour. She was treated in the out-patient department for two months and then she disappeared. She reappeared on December 11, 1942, at the age of two years and eight months; she had no active rickets, but still had severe deformity. Osteoclasis was attempted, but could not be carried out because of the bony density. A plaster cast was applied and left on for three months; after this osteoclasis was effected, but only with great effort. She was still in a plaster cast.

Dr. H. D. STEPHENS said that Dr. PRICE's cases were interesting and very common. A great many of such lesions were not rickets, especially those associated with hard bones in small children. The rachitic children were soft-boned; in their case osteoclasis was easy, and the condition could be rectified by knee and hand under general anaesthesia. Dr. STEPHENS said that the number of these cases was undoubtedly increasing. In many of them, the patient's central nervous system was unstable. The children were excitable. The head was neither square nor rachitic. The lamella closed early, and the child was left bow-legged in both femora and tibiae. A peculiar shaping of the bones took place, which Dr. Littlejohn called "monkey tibia". Dr. STEPHENS considered that an analogy existed in the normal appearance of monkeys, and that the condition was possibly a reversion to the primitive form, causing bowing with inversion. As a rule, these patients were not suitable for osteoclasis, as the irritable nervous system and the muscle spasm remained. Some correction of the inversion and

bowing was obtainable by prolonged treatment with ambulatory and non-ambulatory splints. By these methods, combined with the judicious use of phenobarbital, one could obtain better results than by operation. These cases had become more prevalent since the outbreak of war. Worry and anxiety on the part of the mother during pregnancy and increased instrumental interference at labour might play a part. Not nearly the same number of cases of rickets occurred in Australia as in England.

Dr. H. BOYD GRAHAM remarked that it was necessary to administer sedatives at the onset of the deformity. He recalled a six year old girl who had signs of active rickets. Though some of the patients were not rachitic, others were.

Dr. Price, in reply, thanked the speakers for their remarks. He said that the patients were shown chiefly because, in his experience, rickets was on the increase, and he had wondered whether others had had similar experiences. He was anxious for any suggestions as to the etiology. He considered that the non-rachitic patients to whom he had referred represented an exaggeration of a normal condition.

Cystic Swelling in the Neck.

Dr. Price finally referred to a patient shown by him at a meeting of the society in April, 1943; the patient had a cystic swelling in the neck. At operation this was found to extend deeply beneath the vagus and sympathetic nerves to the anterior aspect of the cervical vertebrae themselves. No connexion could be established with the jugular vein. It contained old blood and possessed a fibrous wall. Examination of sections of the wall revealed a large number of cells apparently derived from the carotid body.

Dermatomyositis with Calcinosis.

Dr. H. J. SINN, in the unavoidable absence of Dr. J. W. GRIEVE, showed a female child, aged ten years and nine months. She was first examined on April 1, 1942. Her mother had died of rheumatic carditis. The child had enjoyed good health till eighteen months before that date, and then indefinite symptoms of tiredness, blueness about mouth and eyes, and a peculiar gait manifested themselves. In May, 1941, she began to suffer from pain in her limbs and from pain in the great toe. In July, 1941, a diagnosis of rheumatic fever was made, and she was kept in bed for eighteen weeks. When she was allowed up, stiffness in the hands and the legs was noted; but these symptoms diminished. However, in two or three months she began to suffer from shortness of breath, from pain in the feet, from "dragging" of her legs and from absence of energy. There was a slight but constant elevation in temperature. On April 1, 1942, her features were pale, puffy and coarse. Her temperature was 99.4° F. and her pulse rate was 100 per minute. The apex beat of the heart was situated in the fourth left intercostal space, three and a quarter inches from the middle line. A soft systolic bruit was audible at the apex. The clinical features were suggestive of rheumatoid arthritis in the ankles, knees, hands, wrists and elbows. Wasting of the limbs was pronounced, and the skin was noted to be dry. No definite nodules were seen, but the malleoli were noticed to be irregular. X-ray examination revealed no bony changes in the hands, and the heart was stated to be a little enlarged. Dr. Sinn said that the condition therefore was diagnosed as rheumatoid arthritis following rheumatism; the double condition had been described by a number of authorities. In May, 1942, lumps appeared in the skin in the region of the ankles and elbows, behind the thighs, and over the iliac crests. The hands and knees became more swollen. The feet became cold and blue. Patches of desquamation and pigmentation appeared on the child's face. Her diet was investigated and found to be satisfactory.

In December, 1942, she was referred by Dr. Macnamara for admission to hospital. She then presented the characteristic features of dermatomyositis with associated calcinosis. The calcareous patches were present in the skin over (i) the olecranon processes, (ii) the tendons of the hamstring muscles, (iii) the malleoli, (iv) the crest of the ilium on both sides, (v) the knees and (vi) the buttocks. X-ray examination revealed irregular soft tissue calcification in the region of the anterior iliac spines, and over the ischial tuberosities. They were not adherent to bone. The other areas were not as yet calcified. The blood calcium content was 10.9 milligrammes per 100 cubic centimetres. The blood phosphorus content was 3.8 milligrammes per 100 cubic centimetres.

Dr. Sinn said that one of Dr. Grieve's objects in showing the patient was the great rarity of the condition. Dr. Sinn drew the attention of the members to an excellent two-page

description of dermatomyositis and associated conditions in Sheldon's "Diseases of Infancy and Childhood"; the author quoted a case under his care, in which the same sequence of rheumatoid arthritis, dermatomyositis and calcinosis obtained. In the case under discussion subcutaneous calcification was of unusual extent. Early diagnosis was extremely difficult. Pain in the limbs associated with a cardiac murmur nearly always signified rheumatic fever; but the members of the society had had an opportunity during the year of studying rare diseases which in the early stages simulated this relatively common disease. Apart from the case under discussion, Dr. Nicholson had shown a patient suffering from leucæmia, who appeared in the initial stages of the disease with limb pains, fever and cardiac bruit. At the previous meeting Dr. Bruce Hallows had shown a child with a supra-renal neuroblastoma, in whom joint pains and a systolic bruit preceding the abdominal swelling and skull metastases might well have led the most careful diagnostician astray.

Dr. Sinn said that, looking back on the illness of the present patient, Dr. Grieve had noted that more importance might have been given to the thickening and puffiness of the face in the early stages. The origin of the disease was obscure. By some, it was thought to be streptococcal. The course of the malady was a chronic one, extending over several years and terminating by exhaustion or by an inter-current respiratory infection. In some cases, some degree of recovery had been described as having occurred after a number of years. The pathological explanation of the disease was that obliterative arteritis of the nutrient vessels of the skin followed on cellular exudation. That accounted for the fibrosis and atrophy.

Dr. H. L. STOKES thought that Dr. Sinn, in the short time at his disposal, had covered the main features of the case; but there was one part of the story that had been left untold and he thought the members would be interested in it. At one stage in the patient's illness, she had come under his care in the out-patient department. Dr. Stokes said that he took the opportunity of carrying out an interesting experiment. The child was fed on a rickets-producing diet for two to two and a half months. Observation over six weeks revealed some reduction in the areas of calcification. Unfortunately, the experiment was not checked by blood calcium estimations.

Dr. ERIC PRICE said that the calcified areas appeared to him to be in the subcutaneous tissues, and not in the muscles, as he had understood Dr. Sinn to say. Dr. Price recalled a woman suffering from Raynaud's disease, who developed calcification in the forearms and in the pulp of the index finger; infection became superimposed in the latter area.

Dr. H. BOYD GRAHAM warned those present not to discount rheumatic infection as the basis of the whole entity. He postulated the possibility of adherent pericarditis with calcification occurring perhaps later.

Dr. Sinn, in reply, said he was sorry if he had given Dr. Price or any others of those present the impression that the calcified plaques were situated in the muscles. Such was not his intention. They were indeed in the subcutaneous tissues and fascial surfaces of the body. Dr. Sinn said he did not refer to *myositis fibrosa*, which sometimes occurred as an accompaniment to dermatomyositis. *Myositis ossificans* was an entirely different disorder, and resulted from trauma. With regard to Dr. Graham's suggestion, there was as yet no evidence of calcification of the pericardium. X-ray examination of the heart revealed some enlargement only. Dr. Sinn's original diagnosis was rheumatic fever, and he still thought that on the evidence available at that time, such a conception of the illness was the only reasonable one that could be entertained.

Possible Chronic Meningococcal Septicæmia.

Dr. Sinn showed a second patient for Dr. Grieve. The child was a male, aged thirteen years and six months. He gave a history of recurrent febrile attacks for the previous two months. These were of sudden onset, and were associated with severe headache and high temperature. There was some pain in the limbs with the first attack, associated with the appearance of lumps about the size of sixpence in the skin. These spots occurred on the limbs or body; they were tender and sometimes had a central purplish colour. They disappeared in a few days, leaving a brown central stain which lasted for a week or so. In two months the boy had had five attacks of fever. In between the attacks he had been well. He often attended school while mildly febrile. His general health had been good except for mild asthmatic attacks and an occasional "barking" cough. His tonsils had been removed. On

examination, the spleen was palpable and a few discrete small glands were palpable in the groins and the axillae. No abnormality was detected in the heart. Blood examination showed the haemoglobin value to be 120%; the erythrocytes numbered 6,200,000 per cubic millimetre and the leucocytes 22,200 per cubic millimetre; no abnormality was detected in a smear; the number of platelets was not reduced, and the differential leucocyte count gave results that fell within normal limits. Neither the Wassermann test nor the Mantoux test produced a reaction. X-ray examination of the chest gave no positive information. Several attempts at blood culture gave negative results. There was no response to the agglutination test for *Brucella abortus*. Four days prior to the meeting an exacerbation had begun with the usual manifestations—fever, headache, skin lesions and a sore throat. Dr. Sinn was able to demonstrate these changes. The skin lesions were nodular and erythematous, slightly tender to touch, and situated over the anterior aspect of the lower extremities and also on the back.

Dr. Sinn said that Dr. Grieve was interested in the case from a diagnostic point of view, especially with regard to the possibility of meningococcal septicaemia. Dr. Sinn said he was not familiar with that type of rash in meningococcal infections, and he was anxious to hear whether any of the members had had experience of it. Dr. Sinn thought the condition might well be recurrent *erythema nodosum*. Dr. Grieve proposed to try the therapeutic effect of sulphamillamide.

Dr. W. FORSTER said that the skin lesions looked embolic to him. The case was possibly one of subacute bacterial endocarditis or some similar disease.

Dr. H. D. STEPHENS asked for a temperature chart not submitted by the child himself.

Dr. Sinn, in reply, said that the case lost much of its interest in the absence of Dr. Grieve. Dr. Sinn suggested that Dr. Grieve be given an opportunity of showing the patient at a subsequent meeting of the society. Finally, Dr. Sinn was able to submit to Dr. Stephens a temperature chart kept by the nurses in the child's ward.

Nutritional Anæmia and Œdema.

Dr. A. G. NICHOLSON showed a female child, aged one year and eight months, who had been admitted to hospital on May 12, 1943, with a history of intermittent cough since birth. One month before her admission to hospital, the eyelids stuck together in the mornings and there was some inflammation of the eyes. Three days prior to her admission to hospital, the mother noticed swelling of the child's ankles, followed by swelling of the abdomen. The bowels were constive and the child was passing smaller amounts of urine than usual. On examination, the face was pale and puffy and the abdomen was protuberant. The cervical and submental lymph glands were enlarged. The apex beat of the heart was not displaced, but a soft systolic bruit was audible at the apex. The umbilicus was everted and mounted on a prominent abdomen. The spleen was just palpable. Pitting œdema was demonstrable in the lower limbs, over the sacrum and as far up the back as the angles of the scapulae. A provisional diagnosis of nephritis was entertained and treatment on these lines was instituted. The urine contained pus cells and bacilli on microscopic examination. Two days after the child's admission to hospital, the mother was interviewed, especially concerning the diet. It soon became apparent that malnutrition was playing a large part in the child's illness; she had never had anything to eat except "Lactogen". Examination of the blood revealed hypochromic macrocytic anemia. The erythrocytes numbered 2,750,000 per cubic millimetre; the haemoglobin value was 39%; the leucocytes numbered 9,000 per cubic millimetre; the colour index was 0.7. Examination of a blood smear revealed anisocytosis and polikilocytosis. The differential leucocyte count revealed no deviation from normal. The child's diet was improved and made to include vitamins. An iron mixture was ordered and two cubic centimetres of liver extract were injected twice a week. Under this routine, the œdema subsided and the child's condition gradually improved. Further investigations, including the performance of the Wassermann and Mantoux tests, gave negative results. No scorbutic changes were revealed by X-ray examination of the long bones. The child's weight on her admission to hospital was 21 pounds five ounces; it dropped to 19 pounds eight ounces, but at the time of the meeting it was 20 pounds four ounces. The erythrocytes now numbered 4,520,000 per cubic millimetre, and the haemoglobin value was 62%. There was no œdema, the spleen was not palpable and the systolic bruit had disappeared.

Correspondence.

REPATRIATION OF ARMY MEDICAL OFFICERS.

SIR: This is a question to which a considerable amount of thought and consideration needs to be given. By sheer good luck in possessing a home and the ability to write what some people want to read, I have been able to repatriate myself. But everyone may not be so fortunate, and it will be a standing disgrace to the profession if any more of its medical volunteers are demobilized to pick fruit and drive a bread truck, as I had to do last year. Or worse still, if they are forced to abandon the country for which they risked their lives and accept appointments overseas, as so many of our graduates have had to do.

If this letter should catch the eye and interest of any of our returned soldier members, would they be good enough to express their views as to the advisability and practicability of forming either a Returned Soldiers' Section of the B.M.A. or a Medical Sub-Branch of the R.S.S.I.L.A.?

Yours, etc.,

MARY THORNTON.

Warrandyte,
Victoria,
August 10, 1943.

PEMPHIGUS.

SIR: At a meeting of the Melbourne Pædiatric Society on April 14, 1943, I presented two children with blistering of the skin and discussed the differential diagnosis of such lesions at some length, having regard to the fact that the audience was not composed of skin specialists exclusively. The report published in THE MEDICAL JOURNAL OF AUSTRALIA, June 26, 1943, was made by the secretary of the Pædiatric Society and was not reviewed by me. No case histories were provided. The fact that the report is not acceptably explicit from the specialist point of view is entirely my fault, as the secretary, to whom I offer my apologies, had requested me to furnish a summary. I intend to write and submit for publication a short paper giving details of the patients' records, but Dr. Goldschlag must await the time when the urgent duties of these days permit sufficient leisure.

Without making any attempt to ascertain the facts in detail, Dr. Goldschlag, in THE MEDICAL JOURNAL OF AUSTRALIA, July 24, 1943, writes an attack and even presumes to dictate the diagnosis in an arrogant fashion. In my opinion he should have taken care to inform himself adequately by simply writing to me. Informed criticism based on acknowledged fact is welcome and helpful, but I feel no diffidence in condemning Dr. Goldschlag's procedure. His differentiation, dispensed with patronage, will be familiar to every dermatologist as the traditional orthodox teaching and may be read in any up-to-date text-book.

Dermatologists are given to wordy battles over nomenclature. These may be of interest to the participants and might suitably form the basis of a private correspondence, whereas the effect on the general reader is extremely boring when the arguments are published. Distinctions in terms are sometimes made where differences are not realistic, and names may bear no relation to the nature and significance of processes they designate. It has been well said that "classifications, though necessary, are fictions of the mind", and the present controversy is an illustration of the dictum.

Dermatitis herpetiformis is an elastic term. Its limits are exceedingly obscure. It is sometimes a diagnosis of convenience and may be used, of course, where the term pemphigus is not favoured. In many cases it is impossible to make a differentiation. With respect and without pronouncement, I quote MacLeod's "Diseases of the Skin" (1933, page 891). He says that "*Dermatitis herpetiformis* is rare in children, and although typical cases have been recorded in childhood, it is open to discussion whether these should not be placed under the heading of *pemphigus vulgaris*, as in the majority, the blisters showed no herpetiform grouping nor were the subjective symptoms intense". I confess that, formerly, my views on these terminological problems were as hide-bound as those of Dr. Goldschlag, but my plea nowadays is for a more realistic attitude.

Further residence in Australia will teach Dr. Goldschlag that we have no special reverence for Central Europe—many of us have had some experience there—and that our

specialists are not as unfamiliar with their subjects as he is anxious to assume.

Yours, etc.,

Lister House,
61, Collins Street,
Melbourne, C.I.
August 4, 1943.

JOHN H. KELLY.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 190, of August 26, 1943.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

Flight Lieutenant J. G. Ople (266846) is transferred from the Reserve with effect from 18th June, 1943.

The following are appointed to commissions on probation with the rank of Flight Lieutenant with effect from the dates indicated: Edward Goodman, M.B., B.S. (257532), Peter Valeso, M.B., B.S. (277436) (21st June, 1943).

Squadron Leader R. J. Wright-Smith (1852) is granted the acting rank of Wing Commander whilst occupying a Wing Commander post with effect from 1st July, 1943.

The following officers are transferred from the Reserve with effect from the dates indicated: (Flight Lieutenants) C. K. Hemmingway (266936) (3rd May, 1943), E. W. Gibson (266785), P. G. D. Prentice (277336), D. Gordon (26870), J. W. P. Henderson (277272), D. D. Latham (277337), P. A. Tod (277138), C. Roe (277273) (12th July, 1943).

Previous notification concerning Flight Lieutenant C. K. Hemmingway (266936), which appeared in *Commonwealth of Australia Gazette*, No. 130, dated 17th June, 1943, is cancelled.

Reserve: Medical Branch.

The following are appointed to commissions on probation with the rank of Flight Lieutenant with effect from the dates indicated: Alan Gordon Nicholson, M.B., B.S., Ph.C. (257529), William Robert Pitney, M.B., B.S. (257530), Kenneth Henry Pike, M.B., B.S. (277438) (10th June, 1943).—(Ex. Min. No. 227—Approved 16th August, 1943.)

Obituary.

BERTRAM INGRAM.

We regret to announce the death of Dr. Bertram Ingram, which occurred on August 28, 1943, at Hobart.

GREGORY JOHN LAMB O'NEILL.

We regret to announce the death of Dr. Gregory John Lamb O'Neill, which occurred on August 24, 1943, at Sydney.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Watts, Archibald William James, M.B., B.S., 1943 (Univ. Sydney), 53, McIntosh Street, Gordon.
Balthasar, Anthony Pierre, M.B., B.S., 1943 (Univ. Sydney), 574, New South Head Road, Rose Bay.

Medical Appointments.

Dr. Charles Leslie Park, in pursuance of the National Security (Medical Coordination Equipment) Regulations, has been appointed as a member of the State Medical Coordination Committee in Tasmania to represent the authority responsible for the control of hospitals in that State.

Books Received.

"A Synopsis of Regional Anatomy", by T. B. Johnston, M.D.; Fifth Edition; 1943. London: J. and A. Churchill Limited. 8½" x 5½", pp. 432, with 17 illustrations. Price: 16s.

"New Aspects of Cheap Food", by Rudolph Keller, D.Sc.; 1943. London: Research Books Limited in association with William Heinemann (Medical Books) Limited. 7½" x 4½", pp. 52, with one table. Price: 1s. 6d. net.

Diary for the Month.

- SEPT. 7.—New South Wales Branch, B.M.A.: Organization and Science Committee.
SEPT. 10.—Queensland Branch, B.M.A.: Council.
SEPT. 14.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
SEPT. 14.—Tasmanian Branch, B.M.A.: Branch.
SEPT. 15.—Western Australian Branch, B.M.A.: Branch.
SEPT. 21.—New South Wales Branch, B.M.A.: Ethics Committee.
SEPT. 22.—Victorian Branch, B.M.A.: Council.
SEPT. 23.—New South Wales Branch, B.M.A.: Clinical Meeting.
SEPT. 24.—Queensland Branch, B.M.A.: Council.
SEPT. 28.—New South Wales Branch, B.M.A.: Medical Politics Committee.
SEPT. 30.—New South Wales Branch, B.M.A.: Branch.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmalm United Friendly Societies' Dispensary; Leichhardt and Peteraham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 173, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

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